



# APPENDIX 1-1

## Authorization and Eligibility Requirements

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2009 Groundwater Management Plan – Santa Maria Valley Groundwater Basin

2010 Groundwater Management Plan – Goleta Groundwater Basin

Integrated Regional Water Management Plan - Proof of Adoption, 2007

Integrated Regional Water Management Plan – Biennial Review, November 2010

Meeting Minutes, Proposition 84 Joint Steering Committee – Project Proponents Meeting, Central Coast Water Authority, Buellton, August 4, 2010,

Meeting Minutes, Proposition 84 Cooperating Partners Meeting, Lompoc Water Treatment Plant, Lompoc, August 19, 2010

Meeting Minutes, Prop 84 Workshop, City Council Chambers, City of Goleta, September 23, 2009, morning session

Meeting Minutes, Prop 84 Workshop, City Council Chambers, City of Goleta, September 23, 2009, evening session

Meeting Minutes, Proposition 84 Cooperating Partners Meeting, October 28, 2009, Buellton

Meeting Minutes, Prop 84 Cooperating Partners Meeting, Santa Barbara, January 20, 2010

Meeting Minutes, Prop 84 Project Selection Workshop #3, Central Coast Water Authority, Buellton, May 4, 2010

Biennial Review Approval Signatures

# **2009 Annual Report of Hydrogeologic Conditions, Water Requirements, Supplies and Disposition**

## **Santa Maria Valley Management Area**



Luhdorff and Scalmanini  
Consulting Engineers

**April, 2010**

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## **Santa Maria Valley Management Area**



*prepared by*

Luhdorff and Scalmanini  
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April, 2010

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## Acronyms and Abbreviations

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af, afy, af/ac	acre-feet, acre-feet per year, acre-feet/acre
AW	applied water
CCRWQCB	Central Coast Regional Water Quality Control Board
CCWA	Central Coast Water Authority
CIMIS	California Irrigation Management Information System
DU	Distribution Uniformity
DWR	California Department of Water Resources
ET	evapotranspiration
ET <sub>aw</sub> , ET <sub>c</sub> , ET <sub>o</sub>	ET of applied water, ET of the crop, reference ET
Fm.	formation
GIS	Geographic Information System
GSWC	Golden State Water Company
K <sub>c</sub>	crop coefficient
LSCE	Luhdorff & Scalmanini Consulting Engineers
mg/l	milligrams per liter
MOU	Memorandum of Understanding
Nipomo CSD	Nipomo Community Services District
NMMA	Nipomo Mesa Management Area
NMMA TG	Nipomo Mesa Management Area Technical Group
NO <sub>3</sub> -NO <sub>3</sub>	nitrate-as-nitrate
NOAA	National Oceanic and Atmospheric Administration
P <sub>E</sub>	effective precipitation
SBCWA	Santa Barbara County Water Agency
SCWC	Southern California Water Company
SMVMA	Santa Maria Valley Management Area
SMVWCD	Santa Maria Valley Water Conservation District
SWP	State Water Project
TMA	Twitchell Management Authority
UCCE	University of California Cooperative Extension
USGS	United States Geological Survey
umho/cm	micromhos per centimeter
WRP	water reclamation plant
WWTP	waste water treatment plant

# **1. Introduction**

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This second annual report of conditions in the Santa Maria Valley Management Area, for calendar year 2009, has been prepared to meet the reporting conditions of the June 30, 2005, Stipulation entered by the Superior Court of the State of California, County of Santa Clara in the Santa Maria Valley Groundwater Basin litigation. The Stipulation divided the overall Santa Maria Valley Groundwater Basin into three management areas, the largest of which overlies the main Santa Maria Valley (the Santa Maria Valley Management Area, or SMVMA) and is the subject of this report. The other two management areas, the Nipomo Mesa Management Area and the Northern Cities Management Area, are addressed in separate annual reports by others.

This report on the SMVMA provides a description of the physical setting and briefly describes previous studies conducted in the groundwater basin, including the recent development of a long-term monitoring program specific to the SMVMA. As reported herein, the Twitchell Management Authority (TMA) commissioned the preparation of a monitoring program for the SMVMA in 2008, and its complete implementation is expected to provide the data with which to fully assess future conditions. This report describes hydrogeologic conditions in the management area historically and through 2009, including groundwater conditions, Twitchell Reservoir operations, and hydrologic and climatic conditions. The water requirements and supplies for agricultural and municipal uses are accounted, as are the components of water disposition in the SMVMA. Discussion is included with regard to any finding of severe water shortage, which is concluded to not be the case through 2009. Finally, findings and recommendations are drawn with regard to further implementation of monitoring and other considerations that will serve as input to future annual reporting. Overall, the organization and formatting of this report is comparable to that utilized for the first annual (2008) report on conditions in the SMVMA.

This report documents the key items specified in the Stipulation, i.e. water requirements, water supplies to meet those requirements, disposition of water supplies, and the condition of water resources in the SMVMA. While the focus of this report is on 2009, historical data were also acquired and analyzed to fully summarize water requirements, supplies, and disposition over the prior decade, i.e. since the end of the analyses used during the Phase III trial. As discussed in the first annual (2008) report, that report necessarily focused only on 2008 conditions due to lack of data availability between 1997 and 2008; those data were acquired in 2009 and are incorporated in this report to complete the historical record to date.

## **1.1 Physical Setting**

The Santa Maria Valley Management Area (SMVMA) includes approximately 175 square miles of the Santa Maria Valley Groundwater Basin in northern Santa Barbara and southern San Luis Obispo Counties, as shown by the location map of the area (Figure 1.1-1). The SMVMA encompasses the contiguous area of the Santa Maria Valley, Sisquoc plain, and Orcutt upland, and is primarily comprised of agricultural land and areas of native vegetation, as well as the urban areas of Santa Maria, Guadalupe, Orcutt, Sisquoc, and several small developments. Surrounding the SMVMA are the Casmalia and Solomon Hills to the south, the San Rafael

Mountains to the southeast, the Sierra Madre Mountains to the east and northeast, the Nipomo Mesa to the north, and the Pacific Ocean to the west. The main stream is the Santa Maria River, which generally flanks the northern part of the Santa Maria Valley; other streams include portions of the Cuyama River, Sisquoc River and tributaries, and Orcutt Creek.

## **1.2 Previous Studies**

The first overall study of hydrogeologic conditions in the Santa Maria Valley described the general geology, as well as groundwater levels and quality, agricultural water requirements, and groundwater and surface water supplies as of 1930 (Lippincott, J.B., 1931). A subsequent comprehensive study of the geology and hydrology of the Valley also provided estimates of annual groundwater pumpage and return flows for 1929 through 1944 (USGS, Worts, G.F., 1951). A followup study provided estimates of the change in groundwater storage during periods prior to 1959 (USGS, Miller, G.A., and Evenson, R.E., 1966).

Several additional studies have been conducted to describe the hydrogeology and groundwater quality of the Valley (USGS, Hughes, J.L., 1977; California CCRWQCB, 1995) and coastal portion of the basin (California DWR, 1970), as well as overall water resources of the Valley (Toups Corp., 1976; SBCWA, 1994 and 1996). Of note are numerous land use surveys (California DWR, 1959, 1968, 1977, 1985, and 1995) and investigations of crop water use (California DWR, 1933, and 1975; Univ. of California Cooperative Extension, 1994; Hanson, B., and Bendixen, W., 2004) that have been used in the estimation of agricultural water requirements in the Valley. Recent investigation of the Santa Maria groundwater basin provided an assessment of hydrogeologic conditions, water requirements, and water supplies through 1997 and an evaluation of basin yield (LSCE, 2000).

## **1.3 SMVMA Monitoring Program**

Under the terms and conditions of the Stipulation, a monitoring program was prepared in 2008 to provide the fundamental data for ongoing annual assessments of groundwater conditions, water requirements, water supplies, and water disposition in the SMVMA (LSCE, 2008). As a basis for designing the monitoring program, all available historical data on the geology and water resources of the SMVMA were first compiled into a Geographic Information System (GIS). The GIS was utilized to define aquifer depth zones, specifically a shallow unconfined zone and a deep semi-confined to confined zone, into which a majority of monitored wells were then classified based on well depth and completion information. Those wells with inconclusive depth and completion information were originally designated as unclassified wells; subsequent review of groundwater level and quality records allowed classification of some of these wells into the shallow or deep aquifer zones, and the monitoring program well networks have been revised accordingly in 2009.

Assessment of the spatial distribution of monitored wells throughout the SMVMA, as well as their vertical distribution within the aquifer system, provided the basis for designation of two monitoring program well networks, one each for the shallow and deep aquifer zones. While the networks are primarily comprised of wells that are actively monitored, they include additional wells that are currently inactive (monitoring to be restarted) and some new wells (installation and

monitoring to be implemented). All network wells are to be monitored for groundwater levels, with a subset of those wells to be monitored for groundwater quality, as shown in the maps and tables of the 2009 revised monitoring program well networks (Figures 1.3-1a and 1.3-1b; Tables 1.3-1a through 1.3-1c). The SMVMA monitoring program is included in Appendix A.

Another use of the GIS was for evaluation of actively and historically monitored surface water and climatic gauges by location and period of record, specifically for Twitchell Reservoir releases, stream discharge, precipitation, and reference evapotranspiration data. Assessment of the adequacy of coverage of the gauges throughout the SMVMA provided the basis for designation of the network of surface water and climate gauges in the monitoring program. The network includes gauges currently monitored as well as those that are inactive (“potential gauges” to potentially be reestablished). For Twitchell Reservoir, stage, storage, releases, and water quality are to be monitored; for surface streams, all current gauges are to be monitored for stage, discharge, and quality (potential gauges monitored for stage and discharge); and for climate, the current and potential gauges are to be monitored for precipitation and reference evapotranspiration data, as shown in the map of the surface water and climate monitoring network (Figure 1.3-2).

In addition to the hydrologic data described above, the monitoring program for the SMVMA specifies those data to be compiled to describe agricultural and municipal water requirements and water supplies. These include land use surveys to serve as a basis for the estimation of agricultural irrigation requirements; they also include municipal groundwater pumping and imported water records, including any transfers between purveyors. Lastly, the monitoring program for the SMVMA specifies water disposition data be compiled, including treated water discharged at waste water treatment plants (WWTPs) and any water exported from the SMVMA. As part of this accounting, estimation will be made of agricultural drainage from the SMVMA and return flows to the aquifer system.

In order to complete this annual assessment of groundwater conditions, water requirements, water supplies, and water disposition in the SMVMA, the following data for 2009 were acquired from the identified sources and compiled in the GIS; as noted above, additional data from the late 1990’s through 2007 were also incorporated to complete most of the historical record.

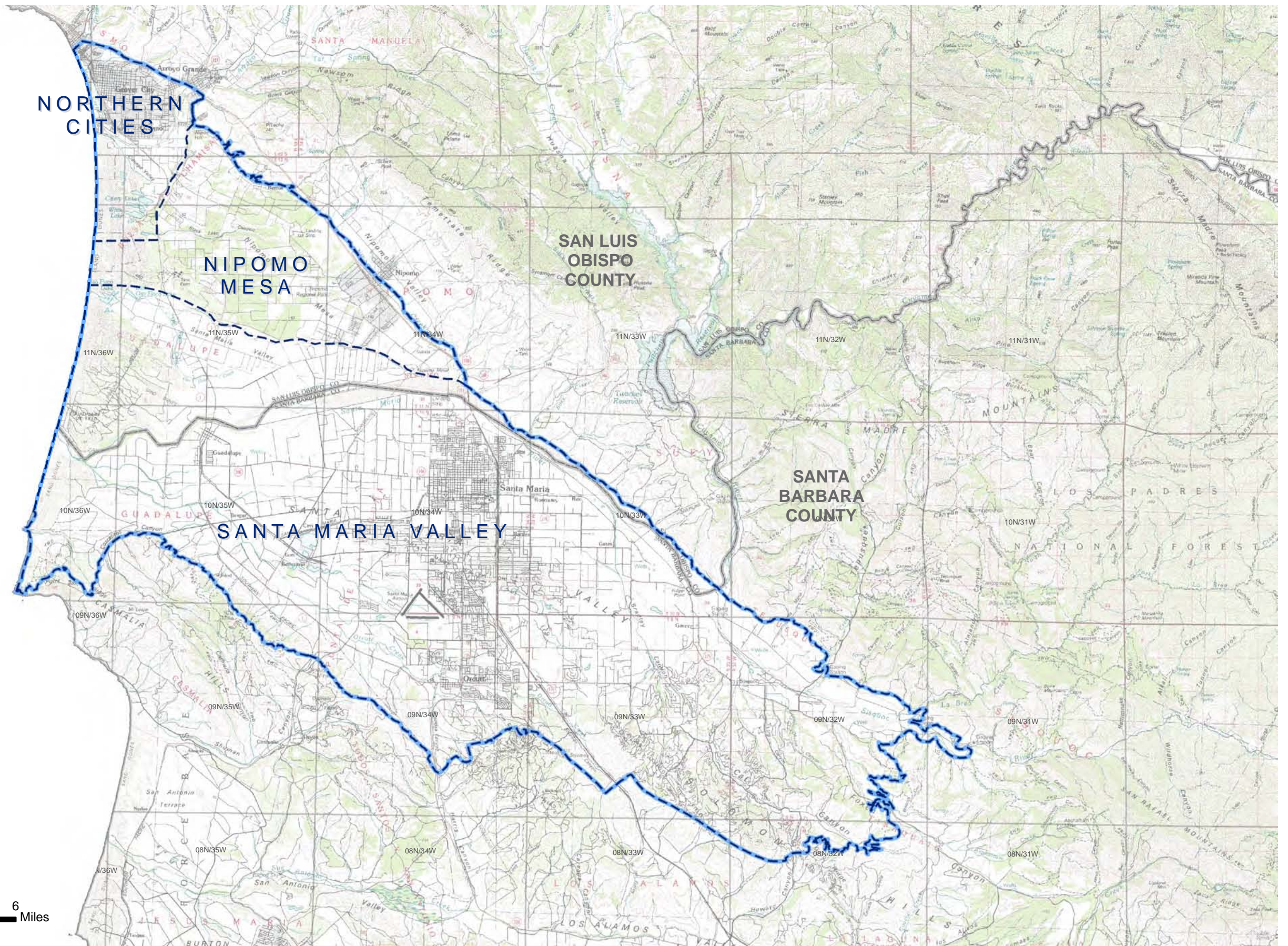
- groundwater level and quality data: the US Geological Survey (USGS), the Technical Group for the adjacent NMMA (NMMA TG), the City of Santa Maria, and Golden State Water Company;
- Twitchell Reservoir stage, storage, and release data: the Santa Maria Valley Water Conservation District (SMVWCD);
- surface water discharge and quality data: the USGS;
- precipitation data: the National Oceanic and Atmospheric Administration (NOAA), California Department of Water Resources (DWR), and SMVWCD;

- reference evapotranspiration and evaporation data: the California DWR, including California Irrigation Management Information System (CIMIS), and SMVWCD, respectively;
- agricultural land use data: Santa Barbara and San Luis Obispo County Agricultural Commissioner's Offices;
- municipal groundwater pumping and imported water data: the City of Santa Maria, the City of Guadalupe, and the Golden State Water Company; and
- treated municipal waste water data: the City of Santa Maria, the City of Guadalupe, and the Laguna Sanitation District.

## 1.4 Report Organization

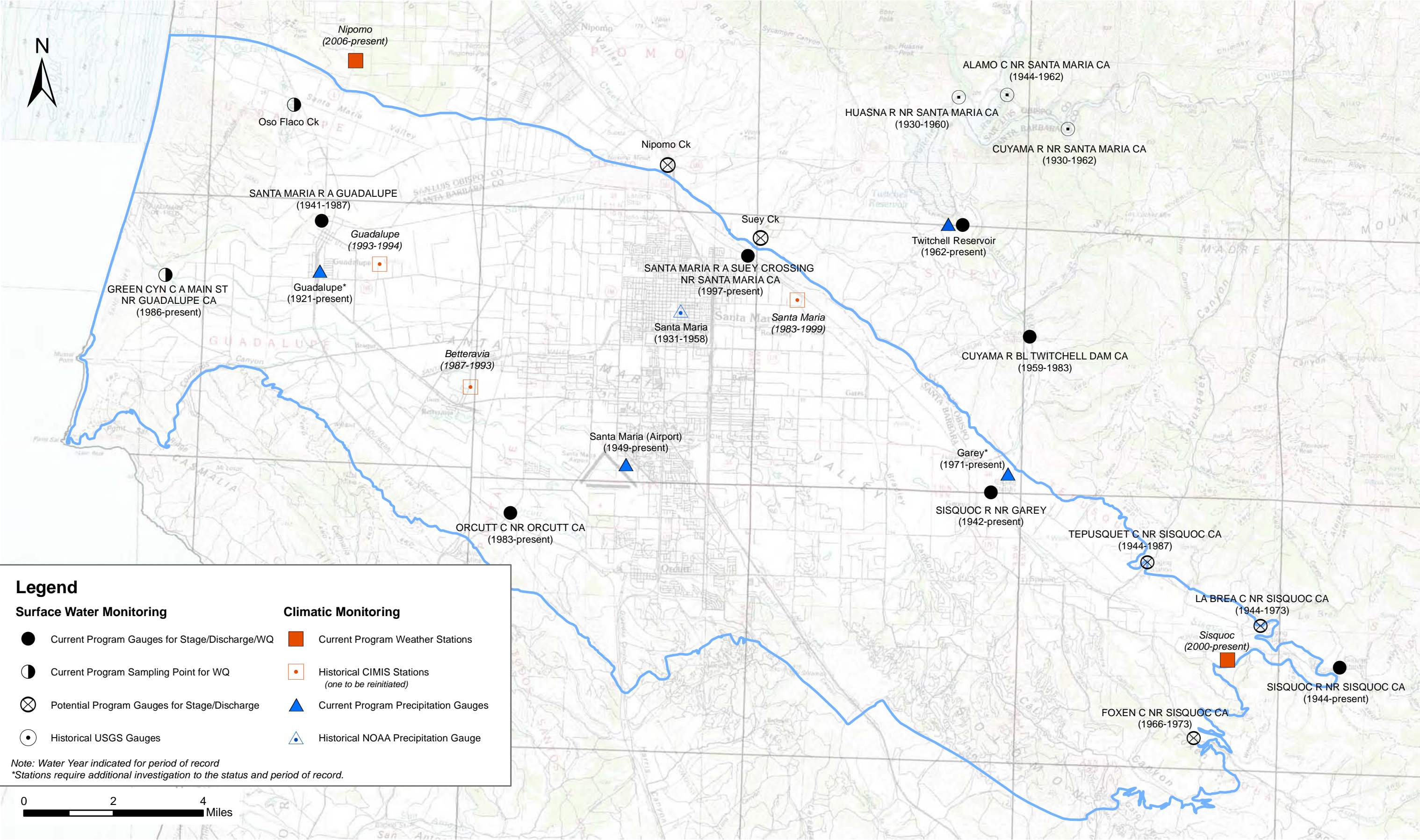
To comply with items to be reported as delineated in the Stipulation, the annual report is organized into five chapters:

- this *Introduction*;
- discussion of *Hydrogeologic Conditions*, including groundwater, Twitchell Reservoir, surface streams, and climate;
- description and quantification of *Water Requirements and Water Supplies* for the two overall categories of agricultural and municipal land and water use in the SMVMA;
- description and quantification of *Water Disposition* in the SMVMA; and
- summary *Conclusions and Recommendations* related to water resources, water supplies, and water disposition in 2009, and related to ongoing monitoring, data collection, and interpretation for future annual reporting.









**Figure 1.3-2**  
**Surface Water and Climatic Monitoring Network**  
**Santa Maria Valley Management Area**

**Table 1.3-1a**  
**Well Network for Monitoring Shallow Groundwater**  
**Santa Maria Valley Management Area**  
**(corresponds to Figure 1.3-1a)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>SHALLOW WELLS</b>						
9N/32W	009N032W06D001S	06D1	USGS	A/S		
	009N032W07A001S	07A1	USGS	A/S		B
	009N032W08N001S	08N1	USGS	A/S		
	009N032W16L001S	16L1	USGS	A/S		
	009N032W17G001S	17G1	USGS	A/S		B
	009N032W22D001S	22D1	USGS	A/S		
	009N032W23K001S	23K1	USGS	A/S		B
9N/33W	009N033W02A001S	02A1	TBD			B
	009N033W05B001S	05B1	TBD			
	009N033W09A001S	09A1	TBD			B
	009N033W11K001S	11K1	TBD			
	009N033W15D002S	15D2	TBD			
	009N033W24L001S	24L1	USGS	A/S		B
9N/34W	009N034W03A002S	03A2	USGS	A/S	A	B
	009N034W04F001S	04F1	TBD			
	009N034W08H001S	08H1	USGS	A/S		B
	009N034W10J001S	10J1	TBD			
	009N034W14H001S	14H1	TBD			B
10N/33W	010N033W07M001S	07M1	USGS	A/S		B
	010N033W07R001S	07R1	USGS	A/S		
	010N033W07R006S	07R6	USGS	A/S		
	010N033W16N001S	16N1	USGS	A/S		
	010N033W16N002S	16N2	USGS	A/S		
	010N033W18G001S	18G1	SMVWCD & USGS	Qtr & S		
	010N033W19B001S	19B1	SMVWCD & USGS	Qtr & S		
	010N033W20H001S	20H1	USGS	A/S	A	B
	010N033W21P001S	21P1	SMVWCD & USGS	Qtr & S		
	010N033W21R001S	21R1	USGS	A/S		B
	010N033W27G001S	27G1	SMVWCD & USGS	Qtr & S		
	010N033W28A001S	28A1	SMVWCD & USGS	Qtr & S		
	010N033W31A001S	31A1	TBD			B
	010N033W34N001S	34N1	TBD			
10N/34W	010N033W35B001S	35B1	USGS	A/S		B
	010N034W06N001S	06N1	SMVWCD & USGS	Qtr & S		B
	010N034W09D001S	09D1	SMVWCD & USGS	Qtr & S		B
	010N034W12D001S	12D1	TBD			B
	010N034W13C001S	13C1	USGS	A/S		
	010N034W13G001S	13G1	USGS	A/S		
	010N034W13J001S	13J1	USGS	A/S		
	010N034W14E004S	14E4	SMVWCD & USGS	Qtr & S	A	B
	010N034W14E005S	14E5	USGS	A/S		
	010N034W20H003S	20H3	SMVWCD & USGS	Qtr & S		B
	010N034W23R002S	23R2	USGS	A/S		B
	010N034W28A002S	28A2	SMVWCD & USGS	Qtr & S		B
	010N034W31F001S	31F1	TBD			
10N/35W	010N035W06A001S	06A1	USGS	A/S		B
	010N035W11J001S	11J1	SMVWCD & USGS	Qtr & S		
	010N035W15C001S	15C1	TBD			B
	010N035W24B001S	24B1	SMVWCD & USGS	Qtr & S		B
	010N035W24Q001S	24Q1	USGS	A/S		
	010N035W27E002S	27E2	TBD			B
	010N035W27R001S	27R1	TBD			
	010N035W36M001S	36M1	TBD			B

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; SLODPW - San Luis Obispo Department of Public Works; USGS - United States

Geological Survey; TBD - To Be Determined

**Table 1.3-1a (continued)**  
**Well Network for Monitoring Shallow Groundwater**  
**Santa Maria Valley Management Area**  
**(corresponds to Figure 1.3-1a)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>SHALLOW WELLS</b>						
10N/36W	010N036W02Q007S	02Q7	USGS	A/S	A	B
	010N036W12R001S	12R1	TBD			B
11N/34W	011N034W29R002S	29R2	SLODPW & USGS	A/S		B
	011N034W30Q001S	30Q1	SMVWCD & USGS	Qtr & S		B
	011N034W33J001S	33J1	SMVWCD & USGS	Qtr & S		
	011N034W34K001S	34K1	TBD			B
11N/35W	011N035W19C002S	19C2	TBD			B
	011N035W25H001S	25H1	TBD			
	011N035W28F002S	28F2	SLODPW & USGS	A/S		
	011N035W33C003S	33C3	TBD			B
	011N035W35D004S	35D4	TBD			B
11N/36W	011N036W13K002S	13K2	TBD			B
	011N036W13K003S	13K3	TBD			B
	011N036W35J006S	35J6	TBD			B

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; SLODPW - San Luis Obispo Department of Public Works; USGS - United States Geological Survey; TBD - To Be Determined

**Notes on Network Modification:**

**09N/32W-6D1** previously unclassified; classified as shallow well (depth unknown; compared to wells of known depth, water levels similar to those from shallow wells)

**09N/33W-12R2** removed; classified as deep well

**10N/33W-18G1** previously unclassified; classified as shallow well (depth = 422'; compared to wells of known depth, water levels similar to those from shallow wells)

**10N/35W-11J1** previously unclassified; classified as shallow well (depth = 215'; compared to wells of known depth, water levels similar to those from shallow wells)

**11N/34W-33J1** previously not included; classified as shallow well (depth = 149'; water level data recently made available by the USGS)

**11N/35W-28F2** previously not included; classified as shallow well (depth = 48'; water level data recently made available by NMMA Tech Comm.)

**11N/36W-35J5** removed; classified as deep well

**Table 1.3-1b**  
**Well Network for Monitoring Deep Groundwater**  
**Santa Maria Valley Management Area**  
**(corresponds to Figure 1.3-1b)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>DEEP WELLS</b>						
9N/33W	009N033W02A007S	02A7	SMVWCD & USGS	Qtr & S	A	B
	009N033W02F001S	02F1	TBD			
	009N033W05A001S	05A1	USGS	A/S		
	009N033W06G001S	06G1	USGS	A/S		B
	009N033W08P001S	08P1	TBD			
	009N033W12R002S	12R2	SMVWCD & USGS	Qtr & S		
9N/34W	009N033W18R001S	18R1	TBD			B
	009N034W03F001S	03F1	USGS	A/S		B
	009N034W04N001S	04N1	TBD			
	009N034W09R001S	09R1	USGS	A/S		B
10N/33W	009N034W13B006S	13B6	TBD			B
	010N033W19K001S	19K1	USGS	A/S		B
10N/34W	010N033W30G001S	30G1	SMVWCD & USGS	Qtr & S	A	B
	010N034W07E004S	07E4	TBD			B
	010N034W12P002S	12P2	TBD			B
	010N034W13H001S	13H1	USGS	A/S		
	010N034W14D001S	14D1	TBD			
	010N034W16K001S	16K1	TBD			B
	010N034W24K001S	24K1	SMVWCD & USGS	Qtr & S		
	010N034W24K003S	24K3	SMVWCD & USGS	Qtr & S		B
	010N034W31J001S	31J1	TBD			B
	010N034W34G002S	34G2	SMVWCD & USGS	Qtr & S		
10N/35W	010N035W07F001S	07F1	TBD			B
	010N035W09F001S	09F1	USGS	A/S		
	010N035W11E004S	11E4	SMVWCD & USGS	Qtr & S		B
	010N035W18F002S	18F2	USGS	A/S		
	010N035W18R001S	18R1	TBD			B
	010N035W21B001S	21B1	SMVWCD & USGS	Qtr & S		B
	010N035W25F001S	25F1	TBD			
10N/36W	010N035W35J002S	35J2	USGS	A/S		B
	010N036W02Q001S	02Q1	USGS	A/S	A	B
	010N036W02Q002S	02Q2	TBD			B
	010N036W02Q003S	02Q3	USGS	A/S	A	B
	010N036W02Q004S	02Q4	USGS	A/S	A	B
	010N036W02Q005S	02Q5	TBD			B
	010N036W02Q006S	02Q6	TBD			B
	010N036W12P001S	12P1	USGS	A/S		B
11N/35W	010N036W13R002S	13R2	TBD			B
	011N035W19E002S	19E2	TBD			B
	011N035W20E001S	20E1	SMVWCD & USGS	Qtr & S		
	011N035W25F003S	25F3	SMVWCD & USGS	Qtr & S		B
	011N035W26K002S	26K2	TBD			B
	011N035W28M001S	28M1	SMVWCD & USGS	Qtr & S		
11N/36W	011N035W29R001S	29R1	TBD			B
	011N036W13K004S	13K4	TBD			B
	011N036W13K005S	13K5	TBD			B
	011N036W13K006S	13K6	TBD			B
	011N036W35J002S	35J2	USGS	A/S	A	B
	011N036W35J003S	35J3	USGS	A/S	A	B
	011N036W35J004S	35J4	USGS	A/S	A	B
	011N036W35J005S	35J5	USGS	A/S	A	B

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; USGS - United States Geological Survey; TBD - To Be Determined

**Notes on Network Modification:**

**09N/33W-2A7** previously not included; classified as deep well (depth = 512'; water level data recently made available by the USGS)

**09N/33W-12R2** previously classified as shallow well; classified as deep well (depth = 640'; compared to wells of known depth, water levels similar to those from deep wells)

**10N/35W-9F1** previously unclassified; classified as deep well (depth = 240'; compared to wells of known depth, water levels similar to those from deep wells)

**10N/35W-18F2** previously unclassified; classified as deep well (depth = 251'; compared to wells of known depth, water levels similar to those from deep wells)

**10N/35W-21B1** previously unclassified; classified as deep well (depth = 300'; compared to wells of known depth, water levels similar to those from deep wells)

**11N/35W-20E1** previously unclassified; classified as deep well (depth = 444'; compared to wells of known depth, water levels similar to those from deep wells)

**11N/35W-25F3** previously unclassified; classified as deep well (depth unknown; compared to wells of known depth, water levels similar to those from deep wells)

**11N/35W-28M1** previously unclassified; classified as deep well (depth = 376'; compared to wells of known depth, water levels similar to those from deep wells)

**11N/36W-35J5** previously classified as shallow well; classified as deep well (depth = 135'; compared to wells of known depth, water levels and quality similar to those from deep coastal network wells)

**Table 1.3-1c**  
**Unclassified Wells for Groundwater Monitoring**  
**Santa Maria Valley Management Area**  
**(shown on Figures 1.3-1a and 1.3-1b)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>UNCLASSIFIED WELLS</b>						
9N/32W	009N032W19A001S	19A1	TBD			
	009N032W27K002S	27K2	TBD			
	009N032W29F001S	29F1	TBD			
	009N032W31F003S	31F3	TBD			
	009N032W33F001S	33F1	USGS	A/S		
	009N032W33M001S	33M1	USGS	A/S		
9N/33W	009N032W33M002S	33M2	USGS	A/S		
	009N033W12C001S	12C1	USGS	A/S		
	009N033W14F001S	14F1	TBD			
9N/34W	009N033W15N001S	15N1	TBD			
	009N034W06C001S	06C1	USGS	A/S		
10N/33W	009N034W15Q001S	15Q1	TBD			
	010N033W26N001S	26N1	USGS	A/S		
	010N033W28F001S	28F1	USGS	A/S		
	010N033W28F002S	28F2	USGS	A/S		
	010N033W29F001S	29F1	USGS	A/S		
	010N033W30M002S	30M2	USGS	A/S		
	010N033W31Q002S	31Q2	USGS	A/S		
	010N033W34E001S	34E1	USGS	A/S		
10N/34W	010N034W26H002S	26H2	USGS	A/S		B
	010N034W29N002S	29N2	USGS	A/S		
10N/35W	010N035W05P002S	05P2	USGS	A/S		
	010N035W06A003S	06A3	USGS	A/S		
	010N035W07E005S	07E5	USGS	A/S		
	010N035W09N002S	09N2	USGS	A/S		B
	010N035W14P001S	14P1 (D3) <sup>1</sup>	USGS	A/S	(A)	(A)
	010N035W23M002S	23M2	USGS	A/S		
11N/34W	011N034W31H001S	31H1	TBD			
11N/35W	011N035W33G001S	33G1	SMVWCD & USGS	Qtr & S		B

<sup>1</sup>14P1 actively monitored for levels but not quality. 14D3 actively monitored for quality but not levels.

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; USGS - United States Geological Survey; TBD - To Be Determined

**Notes on Network Modification:**

**09N/32W-6D1** removed; classified as shallow well  
**10N/33W-18G1** removed; classified as shallow well  
**10N/35W-9F1** removed; classified as deep well  
**10N/35W-11J1** removed; classified as shallow well  
**10N/35W-18F2** removed; classified as deep well  
**10N/35W-21B1** removed; classified as deep well  
**11N/35W-20E1** removed; classified as deep well  
**11N/35W-25F3** removed; classified as deep well  
**11N/35W-28M1** removed; classified as deep well

## **2. Hydrogeologic Conditions**

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Current and historical hydrogeologic conditions in the SMVMA, including groundwater conditions, Twitchell Reservoir operations, and stream and climate conditions, are described in the following sections of this Chapter.

### **2.1 Groundwater Conditions**

To provide a framework for discussion of groundwater conditions, the geology of the SMVMA, including geologic structure and the nature and extent of geologic formations comprising the aquifer system, is described in the following section. Current groundwater levels are then described in relation to historical trends in groundwater levels and flow directions in the SMVMA, as well as in context of Stipulation protocol for defining conditions of severe water shortage. Current and historical groundwater quality conditions are also discussed, including general groundwater quality characteristics as well as groundwater quality degradation, specifically due to elevated nitrate concentrations.

#### **2.1.1 Geology and Aquifer System**

The SMVMA is underlain by unconsolidated alluvial deposits that comprise the aquifer system, primarily gravel, sand, silt and clay that cumulatively range in thickness from about 200 to 2,800 feet. The alluvial deposits fill a natural trough, which is composed of older folded and consolidated sedimentary and metamorphic rocks with their deepest portions beneath the Orcutt area. The consolidated rocks also flank the Valley and comprise the surrounding hills and mountains; typically, the consolidated rocks do not yield significant amounts of groundwater to wells. The geologic formations comprising the alluvial deposits and the geologic structure within the study area are illustrated in a generalized geologic map (Figure 2.1-1a) and two geologic cross sections (Figures 2.1-1b and 2.1-1c).

The alluvial deposits are composed of the Careaga Sand and Paso Robles Formation (Fm.) at depth, and the Orcutt Fm., Quaternary Alluvium, and river channel, dune sand, and terrace deposits at the surface (USGS, Worts, G.F., 1951). The Careaga Sand, which ranges in thickness from about 650 feet to a feather edge, is identified as being the lowermost fresh water-bearing formation in the basin (DWR, 1970), resting on the above-mentioned consolidated rocks (specifically, the Tertiary-aged Foxen Mudstone, Sisquoc Fm., and Monterey Shale and the Jurassic/Cretaceous-aged Franciscan Fm., descriptions of which may be found in USGS, Worts, G.F., 1951). Overlying the Careaga Sand is the Paso Robles Fm., which comprises the greatest thickness of the alluvial deposits (from about 2,000 feet to a feather edge); the thickest portion of this formation is located beneath the Orcutt area. Both the Careaga Sand and Paso Robles Fm. underlie the great majority of the SMVMA (see Figures 2.1-1b and 2.1-1c). The Careaga Sand is mainly composed of white to yellowish-brown, loosely-consolidated, massive, fossiliferous, medium- to fine-grained sand with some silt and is reported to be predominantly of marine origin (USGS, Worts, G.F., 1951). The Paso Robles Fm. is highly variable in color and texture, generally composed of yellow, blue, brown, grey, or white lenticular beds of: boulders and coarse to fine gravel and clay; medium to fine sand and clay; gravel and sand; silt; and clay

(USGS, Worts, G.F., 1951). This formation is reported to be primarily fluvial (stream-laid) in origin and there is no areal correlation possible between the individual beds, with the exception of a coarse basal gravel of minor thickness in the Santa Maria Valley oil field, generally in the southeast part of the SMVMA.

Above the Paso Robles Fm. and comprising the Orcutt Upland is the Orcutt Fm., which is typically about 160 to 200 feet thick; in the remainder of the SMVMA, the Paso Robles Fm. is overlain by the Quaternary Alluvium, which comprises the majority of the Valley floor and is typically about 100 to 200 feet thick. Further north in the adjacent NMMA, the Paso Robles Fm. is overlain by the Older Dune Sand, which comprises the Nipomo Mesa and ranges in thickness from approximately 400 feet to a feather edge. Along the northeast edge of the Sisquoc plain, the Paso Robles Fm. is overlain by terrace deposits approximately 60 feet thick. The Orcutt Fm. is composed of conformable upper and lower units (“members”), both reported to be mainly of fluvial origin that become finer toward the coast. The upper member generally consists of reddish-brown, loosely-compacted, massive, medium-grained clean sand with some lenses of clay, and the lower member is primarily grey to white, loosely-compacted, coarse-grained gravel and sand (USGS, Worts, G.F., 1951).

The Quaternary Alluvium is also composed of upper and lower members that are reported to be mainly fluvial in origin. The composition of the upper member becomes progressively finer toward the coast, with boulders, gravel, and sand in the Sisquoc plain area; sand with gravel in the eastern/central Valley area; sand with silt from the City of Santa Maria to a point approximately halfway to Guadalupe; and clay and silt with minor lenses of sand and gravel from that area westward. The lower member is primarily coarse-grained boulders, gravel and sand with minor lenses of clay near the coast. The Older Dune Sand is composed of loosely- to slightly-compacted, massive, coarse- to fine-grained, well-rounded, cross-bedded quartz sand that is locally stained dark reddish-brown (California DWR, 1999). The terrace deposits, in general, are similar in composition to the coarse-grained parts of the Quaternary Alluvium.

Two geologic cross sections illustrate several points about the geologic structure and variable aquifer thickness throughout the SMVMA. Longitudinal geologic cross section A-A’ (see Figure 2.1-1b) begins in the area near the mouth of the Santa Maria River, traverses the Orcutt Upland, and terminates in the Sisquoc plain area near Round Corral, immediately southeast of the SMVMA. It shows the relative thicknesses of the various geologic formations and their general “thinning” from the central valley area toward the Sisquoc plain. This cross section also shows the Quaternary Alluvium and Orcutt Fm., essentially adjacent to each other and comprising the uppermost aquifer in the SMVMA, divided into the above-described upper and lower members.

Transverse geologic cross section B-B’ (see Figure 2.1-1c) begins in the Casmalia Hills, traverses the western portion of the Valley (near the City of Guadalupe) and the southern Nipomo Mesa, and terminates at Black Lake Canyon. It shows the prominent asymmetrical syncline (folding of the consolidated rocks and Paso Robles Fm.) within the SMVMA and adjacent NMMA, with the deepest portion of Paso Robles Fm. toward the southern edge of the SMVMA, gradually becoming thinner and more shallow toward the north where it extends beneath the NMMA. This cross section also shows that both the upper and lower members of

the Quaternary Alluvium extend north to the Santa Maria River, but only the upper member extends beyond the River to the southern edge of the Nipomo Mesa, and neither member extends northward beneath the Mesa.

Several faults have been reported to be located in the SMVMA and adjacent portion of the NMMA. The Santa Maria and Bradley Canyon faults, located in the Valley in the area between the City of Santa Maria and Fugler Point (at the confluence of the Cuyama and Sisquoc Rivers to form the Santa Maria River), are concealed and they are reported to be northwest-trending, high-angle faults, that vertically offset the consolidated rocks, Careaga Sand, and Paso Robles Fm., but not the overlying Quaternary Alluvium or Orcutt Fm. (USGS, Worts, G.F., 1951). The Oceano and Santa Maria River faults are of a similar nature (the latter fault also has a significant strike-slip component of movement), but they are primarily located in the southern Nipomo Mesa. The maximum vertical offset on the Oceano fault is reported to be in the range of 300 to 400 feet within the Careaga Sand and Paso Robles Fm.; on the other faults, the vertical offset is reported to be much less, within the range of 80 to 150 feet (USGS, Worts, G.F., 1951; California DWR, 1999). However, these faults do not appear to affect groundwater flow within the SMVMA, based on the review of historical groundwater level contour maps (USGS, Worts, G.F., 1951; LSCE, 2000).

There is no known structural (e.g., faulting) or lithologic isolation of the alluvial deposits from the Pacific Ocean; i.e., the Quaternary Alluvium, Orcutt Fm., Careaga Sand, and Paso Robles Fm. aquifers continue beneath the Ocean. Thus, there is geologic continuity that permits groundwater discharge from the SMVMA to the Ocean, and the potential exists for salt water to intrude into the coastal (landward) portions of the aquifers if hydrologic conditions within them were to change.

The aquifer system in the SMVMA is comprised of the Paso Robles Fm., the Orcutt Fm., and the Quaternary Alluvium (USGS, Worts, G.F., 1951). The upper member of the Quaternary Alluvium is consistently finer-grained than the lower member throughout the Valley. Further, the upper member becomes finer grained toward the Ocean such that it confines groundwater in the lower member from the approximate area of the City of Santa Maria's waste water treatment plant westward (approximately eight miles inland from the coast). The result of this has been some artesian conditions in the western valley area (historically, flowing artesian wells were reported until the early 1940s in the westernmost portion of the Valley) (USGS, Worts, G.F., 1951). More recently, many wells belonging to local farmers in the western valley area, specifically in the Oso Flaco area, began flowing again in response to rising confined groundwater levels during winter 1999.

Analysis of the geology, groundwater levels, and groundwater quality indicates that the aquifer system varies across the area and with depth, and this variation was the basis for the shallow and deep aquifer zone designations of the SMVMA monitoring program (LSCE, 2008). In the central and major portion of the SMVMA, there is a shallow unconfined zone comprised of the Quaternary Alluvium, Orcutt Fm., and uppermost Paso Robles Fm., and a deep semi-confined to confined zone comprised of the remaining Paso Robles Fm. and Careaga Sand. In the eastern portion of the SMVMA where these formations are much thinner and comprised of coarser materials, particularly in the Sisquoc Valley, the aquifer system is essentially uniform without

distinct aquifer depth zones. In the coastal area where the surficial deposits (upper members of Quaternary Alluvium and Orcutt Fm.) are extremely fine-grained, the underlying formations (lower members of Quaternary Alluvium and Orcutt Fm., Paso Robles Fm., and Careaga Sand) comprise a deep confined aquifer zone.

### **2.1.2 Groundwater Levels**

Groundwater levels within the SMVMA have fluctuated greatly since the 1920's, when historical water level measurements began, with marked seasonal and long-term trends, as shown by a collection of representative groundwater level hydrographs from various areas throughout the SMVMA (Figure 2.1-2). The areas are designated on Figure 2.1-2 for illustrative purposes only, and include the so-called Coastal, Oso Flaco, Central Agricultural, Municipal Wellfield, Twitchell Recharge, and Sisquoc Valley areas. The historical groundwater level hydrographs illustrate that widespread decline in groundwater levels, from historical high to historical low levels, occurred between 1945 and the late 1960's. The declines ranged from approximately 20 to 40 feet near the coast, to 70 feet near Orcutt, to as much as 100 feet further inland (in the area just east of downtown Santa Maria). Those declines were observed in both the shallow and deep aquifer zones, and are interpreted today to have been the combined result of progressively increasing agricultural (and to a lesser degree, municipal) demand and long-term drier than normal climatic conditions during that period.

Since then, the basin has alternately experienced significant recharge (recovery) and decline which, collectively, reflect a general long-term stability as groundwater levels in both aquifer zones have fluctuated between historical-low and near historical-high levels over alternating five- to 15-year periods. Groundwater levels throughout the SMVMA have shown this trend, but with different ranges of fluctuation (see Figure 2.1-2); and groundwater levels have repeatedly recovered to near or above previous historical-high levels, including as recently as 2002. In the areas along the Santa Maria River, groundwater level fluctuations are greater in the shallow aquifer zone than the deep (see Twitchell Recharge Area, Central Agricultural Area, and Oso Flaco Area hydrographs). Conversely, in the Municipal Wellfield and Coastal Areas, groundwater level fluctuations are greater in the deep aquifer zone. Hydrographs from wells along the coastal portion of the SMVMA show that groundwater elevations have remained above sea level, with deep (confined) groundwater levels rising enough to result in flow at the ground surface, throughout the historical period of record. The periodic groundwater level fluctuation since the late 1960's (with a long-term stability) have apparently been due to intermittent wet and dry climatic conditions, with natural recharge during wet periods complemented by supplemental recharge along the Santa Maria River from the Twitchell Reservoir project (since becoming fully operational in the late 1960's). Long-term stability would also appear to be partially attributable to a general "leveling-off" of agricultural land and water use in the basin since the early to mid-1970's, as further described in Chapter 3.

Most recently, from 2002 through 2009, groundwater levels in both the shallow and deep zones have gradually declined, with the largest amount visible in portions of the Sisquoc Valley and Oso Flaco areas. Particularly in light of prevailing land use and water requirements, recent groundwater level decline can be considered to be at least partially due to the fact that Twitchell Reservoir releases, for in-stream supplemental groundwater recharge, have been well below the

historical average in most years since 2000 (including no releases in 2009), as discussed in Section 2.2. Importantly, 2009 groundwater levels do not trigger the Stipulation provisions for defining conditions of severe water shortage because, among other considerations, they remain within the historical range of groundwater levels throughout the SMVMA. Also important is that coastal groundwater levels remain well above sea level through 2009 and, thus, conditions that would be indicative of potential sea water intrusion are absent.

Groundwater beneath the SMVMA has historically flowed to the west-northwest from the Sisquoc area toward the Ocean, and this remained the case during 2009 as illustrated by contour maps of equal groundwater elevation for the shallow and deep aquifer zones (Figures 2.1-3a through 2.1-3f). One notable feature in the contour maps regarding hydrologic conditions in 2009 is the widening of groundwater level contours beneath the central-south and western portions of the SMVMA. This indicates a reduced (flatter) groundwater gradient, tending slightly toward a local pumping depression, likely reflecting ongoing groundwater pumping in and around the municipal wellfield near the Santa Maria Airport and Town of Orcutt. In this area, both agricultural and municipal water supply wells of the City of Santa Maria and the Golden State Water Company are operated, although municipal pumping in 2009 remained notably lower than prior to the availability of State Water Project water as discussed in Chapter 3. The majority of municipal groundwater pumping is conducted from the purveyors' deep wells, and the groundwater elevation maps show greater flattening of the gradient in the deep aquifer zone. Overall, this has had the effect of slowing (but not stopping or reversing) the movement of groundwater through that portion of the SMVMA. However, it should be noted that agricultural and/or municipal groundwater pumping has been conducted in this area for many decades, and a generally reduced groundwater gradient has been observed since about 1960 (USGS, Miller, G.A., and Evenson, R.E., 1966; USGS, Hughes, J.L., 1977; LSCE, 2000).

Also notable is the overall seasonal lowering of shallow and deep zone water levels across the SMVMA generally beginning in early spring and continuing through the fall period. Some decline was observed between February and April with additional decline through late October, presumably reflecting overall increased groundwater pumping and reduced recharge beginning as early as February and continuing through the fall.

Lastly, during both spring and fall periods, and particularly in the western portion of the SMVMA, a seaward gradient for groundwater flow was maintained in both aquifer zones. Importantly, coastal groundwater levels in both aquifer zones remained well above sea level, with groundwater elevations typically exceeding 15 feet, MSL.

### **2.1.3 Groundwater Quality**

Groundwater quality conditions in the SMVMA have fluctuated greatly since the 1930's, when historical water quality sampling began, with marked short- and long-term trends. Groundwater quality in the SMVMA historically reflected the various natural sources of recharge to the aquifer system, most notably streamflows of the Cuyama and Sisquoc Rivers that provided recharge along the Santa Maria River. The great majority of groundwater in the SMVMA, primarily in the eastern and central portions of the Santa Maria Valley and in the Sisquoc Valley, had historically been of a calcium magnesium sulfate type originating from the Cuyama and

Sisquoc River streamflows. Groundwater had historically been of better quality toward the Orcutt Upland, Nipomo Mesa, the City of Guadalupe, and coastal areas (Lippincott, J.B., 1931).

With development of the Valley and surrounding areas in the 1940's through 1970's, including expansion of the agricultural and urban areas and addition of the Twitchell Reservoir project, groundwater quality conditions changed within the SMVMA. The changes included improvement of the general groundwater quality in the eastern to central part of the Santa Maria Valley in and near the area of Twitchell Reservoir recharge, including the current-day municipal wellfield near the Town of Orcutt. Degradation in groundwater quality occurred further west and downgradient in the Valley, specifically with elevated general mineral and nitrate concentrations (USGS, Hughes, J.L., 1977).

Subsequently, from the 1970's through 2009, general mineral concentrations in groundwater have remained essentially unchanged, including the occurrence of better quality water in the SMVMA's eastern, central, and southern portions and poorer quality water to the west. Further, groundwater quality is generally slightly better in the deep aquifer zone compared to the shallow, as shown by a map with representative historical groundwater quality graphs from areas throughout the SMVMA (Figure 2.1-4). While groundwater quality data from 2009 for the SMVMA are extremely sparse, assessment of those data indicates that, during 2009, specific conductance values in the shallow aquifer zone generally ranged between 1,100 and 1,500 umho/cm in the Twitchell Recharge and Municipal Wellfield Areas, and were about 1,600 umho/cm in the Coastal Area. Specific conductance values in the deep zone were 900 umho/cm in the Sisquoc Valley; between 1,200 and 1,600 umho/cm in the Twitchell Recharge Area; and generally less than 1,600 umho/cm in the Coastal Area (less than 1,100 umho/cm in groundwater deeper than 600 feet). No specific conductance data were available in 2009 for the deep zone in the Municipal Wellfield Area.

In contrast to the stability in general groundwater quality concentrations observed during this recent period, nitrate concentrations in shallow groundwater have progressively increased, in some cases to the point where municipal purveyors have had to reduce or cease pumping from water supply wells with shallow zone completions in order to comply with drinking water standards. In 2009, nitrate-as-nitrate (NO<sub>3</sub>-NO<sub>3</sub>) concentrations in shallow groundwater remained elevated, in many areas above the primary drinking water standard of 45 mg/l. In the Twitchell Recharge Area, nitrate concentrations were higher in 2009 than 2008, with the greatest increase observed in well 10N/33W-20H1, from 41 to 76 mg/l during the last year. A single shallow well in the Municipal Wellfield showed a marked decline in nitrate concentrations during the last year, from 62 to 18 mg/l; however, the latter result is questionable given monitoring results from the well since 2002 have consistently shown nitrate levels above 50 mg/l. Nitrate concentrations in shallow coastal groundwater remained non-detect (less than 0.18 mg/l). In contrast to widespread elevated nitrate concentrations in shallow groundwater, deep groundwater concentrations remain markedly lower, generally less than 10 mg/l. Exceptions to this are two deeper wells in the south-southeast part of the Valley (9N/33W-02A7 and 9N/34W-03F2), with nitrate concentrations around 30 mg/l, and some coastal deep monitoring wells with nitrate levels exceeding 35 mg/l, as discussed below.

Of particular importance to ongoing assessment of potential conditions of sea water intrusion are the groundwater quality data from two sets of coastal monitoring wells. During an investigation conducted in the late 1960's, for which the monitoring well sets were constructed, localized areas of degraded shallow groundwater were identified but concluded at the time to be due to environmental factors other than intrusion (California DWR, 1970). Review of the coastal monitoring results through 2009, in particular specific conductance values, provides an indication of whether sea water intrusion has occurred in the coastal SMVMA; review of coastal nitrate concentrations provides a measure of the extent and magnitude of water quality degradation from land use activities further inland.

Since the commencement of coastal groundwater quality monitoring, including in 2009, coastal groundwater has continued to show elevated but largely unchanging specific conductance values. Shallow groundwater near the southerly monitoring well set (wells 10N/36W-02Q1 through 02Q7, Figure 2.1-4) had values of about 1,600 umho/cm in 2009; deep groundwater values have been lower, around 1,000 umho/cm over the last 30 years. Groundwater at the more northerly monitoring well set (11N/36W-35J2 through 35J5) shows more variation in specific conductance values with depth, from 1,100 umho/cm in the deepest well increasing to a range of 1,500 to 1,900 umho/cm in the intermediate to shallow wells. Specific conductance values in the shallowest well have gradually risen throughout the monitoring period through 2009 from about 1,400 to 1,700 umho/cm.

Some coastal groundwaters, specifically in the deep aquifer zone near the northerly monitoring well set, have shown gradually increasing degradation from nitrate, including through the present. Nitrate (as nitrate) concentrations have steadily risen from a range of 5 to 10 mg/l in the 1980's to between 36 and 67 mg/l in 2009 (see Figure 2.1-4). In contrast, groundwaters in the shallow and deep zones near the southerly monitoring well set have consistently shown very low concentrations of nitrate through the present. Shallow groundwater continued to have non-detectable levels of nitrate (less than 0.18 mg/l) and deep groundwater concentrations remained below 3 mg/l through 2009. Nitrate concentrations in the deepest groundwater, specifically below a depth of 600 feet, along the coast remain stable with values of 3 mg/l or less.

It should be noted that previously reported groundwater quality results from 2008 for one coastal well of intermediate depth, specifically well 10N/36W-02Q4, now appear to be anomalous. In 2008, specific conductance and nitrate (as nitrate) values were reported as 2,810 umho/cm and 20 mg/l, respectively; in contrast, all other results from annual sampling of the well over the last 30 years, including in 2009, have shown specific conductance values less than 1,000 umho/cm and nitrate concentrations less than 3 mg/l.

Overall, the groundwater quality monitoring results from 2009 indicate general mineral quality conditions remain stable across the SMVMA and in particular along the coast, with no indication of sea water intrusion. Specific conductance values remain elevated in groundwater in all areas, to levels ranging between 900 and 1,600 umho/cm. In contrast, degradation from nitrate remains in shallow groundwater across the SMVMA, with concentrations in some areas well above the primary drinking water standard of 45 mg/l. In deep groundwater, a long-term gradual increase in nitrate concentrations continues in the northerly portion of the coast, to between 36 and 67 mg/l, while they remained less than 10 mg/l near the municipal wellfield in 2009.

## **2.2 Twitchell Reservoir Operations**

In order to describe Twitchell Reservoir operations, monthly records of reservoir stage, storage, and releases were updated and recorded observations of reservoir conditions were noted. The historical stage, storage, and releases, including through 2009, are described in relation to observed climatic conditions in the SMVMA.

### **2.2.1 Reservoir Stage and Storage**

Historical stage and storage in Twitchell Reservoir, for which reliable records begin in 1967, indicate a typical seasonal rise with winter and spring rain, followed by decline through subsequent spring and summer releases. Reservoir stage has risen to as high as about 640 feet msl, corresponding to storage of nearly 190,000 acre-feet, on several occasions during the winter and spring months of years during which rainfall amounts were substantially higher than average. Historical rises in stage have been rapid, occasionally over one or two months, with subsequent declines gradually spread over the subsequent year or multiple years. During those years when releases have essentially emptied the reservoir for purposeful supplemental groundwater recharge through the Santa Maria River channel, the dam operator recorded the associated minimum reservoir stage, which has risen over time from about 480 feet msl in 1968, to 525 feet msl since 1986. This rise reflects the long-term filling of former dead pool storage (about 40,000 acre-feet below the reservoir outlet for release from conservation storage) with sediment that has naturally occurred with operation of the project (SMVWCD, 1968-2009). These seasonal fluctuations and long-term rise in minimum stage, shown in relation to the reservoir conservation, flood control, and surcharge pools, are illustrated in a graph of historical reservoir stage and storage (Figure 2.2.1a).

It is noteworthy that the sedimentation of the former dead pool storage below the conservation outlet in Twitchell Reservoir has not impeded the conservation of runoff for subsequent release for downstream groundwater recharge. Except for a few individual years over the life of the reservoir, accumulated storage in any year has been less than the designated active conservation pool of 109,000 af. In the infrequent wet years when greater storage could be conserved, e.g. 1969, 1978, 1983, 1995, and 1998, the SMVWCD has been permitted to temporarily utilize some of the dedicated flood control pool (89,000 af) to conserve those additional inflows and then shortly release them for downstream recharge. Total storage has never exceeded the combined conservation pool and flood control pool storage volume (198,000 af) and has never invaded the uppermost surcharge pool (159,000 af above the conservation and flood control pools) in the overall reservoir.

Reservoir storage has historically risen to between 150,000 and nearly 190,000 acre-feet (af) during the winter and spring months of years during which rainfall was substantially higher than average, with storage commonly below 50,000 af during most other years. As can be seen on Figure 2.2-1a, reservoir storage has repeatedly dropped to essentially zero during periods of below-average rainfall, including those associated with drought conditions in 1976-77 and 1987-90. Reservoir storage was also essentially zero during most of 2000 through 2004 as a result of a drier climatic period that began in 2001. About 50,000 af of storage were accrued in both 2005

and 2006, all of which was released for downstream groundwater recharge. There was essentially no storage in 2007 and, during 2008, reservoir storage reached a maximum of about 20,000 af in March before being almost entirely released for recharge by the end of the year. In 2009, a total of only about 1,000 af accrued in February, after which storage rapidly declined through reservoir evaporation and seepage.

### **2.2.2 Reservoir Releases**

Twitchell Reservoir annual releases for in-stream groundwater recharge since 1967 have ranged from zero during low rainfall years and drought periods to a maximum of 243,660 af in 1998, as illustrated in a bar chart of annual reservoir releases (Figure 2.2-1b). In general, and most notably in the Twitchell Recharge Area, groundwater levels have tended to track Twitchell releases since the beginning of Reservoir operations (see Figure 2.1-2 and 2.2-1b). The long-term average annual release amount for the period 1967 through 2009 is 53,200 afy, with below-average releases during slightly more than half of those years. The five-year period from 1995 through 1999 is notable for continual releases in amounts well above the annual average, reflecting a wetter climatic period from 1993 through 1998. Also notable are multiple year periods when releases dropped to zero, specifically from 1987 through 1990 and from 2002 through 2004, reflecting the drier climatic conditions during those periods of time. While releases in 2005 and 2006 amounted to about 106,000 and 80,000 af, respectively, drier climatic conditions have persisted since then, and there were no releases for in-stream groundwater recharge in 2009.

## **2.3 Streams**

The surface water hydrology of the SMVMA is characterized in this section, specifically the current conditions in relation to historical trends in stream discharge and quality.

### **2.3.1 Discharge**

The main streams entering the SMVMA are the Cuyama and Sisquoc Rivers; these rivers join on the Santa Maria Valley floor near Garey and become the Santa Maria River, which drains the Valley from that point westward (see Figure 1.3-2). The headwaters of the Sisquoc River include a portion of the San Rafael Mountains and Solomon Hills, and the River's main tributaries within the SMVMA are Foxen, La Brea, and Tepusquet Creeks. Streamflow in the Sisquoc River and its tributary creeks have remained unimpaired through the present. The Cuyama River drains a portion of the Sierra Madre Mountains, including the Cuyama Valley, and streamflow into the Santa Maria River has been controlled since construction of Twitchell Dam between 1957 and 1959. The Santa Maria River receives minor streamflows from two small tributaries, Suey and Nipomo Creeks, along its course toward the City of Guadalupe and the Pacific Ocean. In the southern portion of the SMVMA, Orcutt Creek drains a portion of the Solomon Hills and the Orcutt area before ending near Betteravia.

Stream discharge in the Cuyama River below the dam, recorded during the initial period of Twitchell project operations between 1959 and 1983, averaged 37,350 afy. As discussed above, Twitchell Reservoir releases averaged 53,200 afy from 1967 through 2009. The historical

variation in reservoir releases and Cuyama River streamflow is shown in a bar chart of annual surface water discharge for the River (Figure 2.3-1a). Cuyama River stream discharge, which comprises the largest source of SMVMA groundwater recharge, has ranged over the historical period of record from no streamflow during several drought years, including in 2009, to a high of almost 250,000 af during 1998.

Stream discharge in the Sisquoc River, recorded at gauges at the southeast end of the Sisquoc plain and further downstream near the town of Garey, averages 37,900 afy over the historical period of record. The downstream gauge provides a measure of the stream discharge entering the SMVMA from the Sisquoc plain, and it reflects inflow from the headwaters of the Sisquoc River and its tributaries, as well as gains from and losses to groundwater in the Sisquoc plain. The historical variation in Sisquoc River streamflow is shown in a bar chart of annual surface water discharge for the River at both gauges (Figure 2.3-1b). Sisquoc River stream discharge, which comprises a large source of SMVMA groundwater recharge, has ranged over the historical period of record from no streamflow during several drought years to over 300,000 af during 1998; at the time of this reporting, monthly discharge data were available for only January through September 2009, so the 2009 annual discharge into the SMVMA cannot yet be reported. Of note is that the upstream gauge (“near Sisquoc”) was non-operational, and thus no data are available, from 1999 through 2007. Further, discharge amounts in the tributaries Foxen, La Brea, and Tepusquet Creeks have not been recorded since the early 1970's (early 1980's for the latter creek), when gauge operations were discontinued. As a result, the net amount of groundwater recharge in the Sisquoc plain from the Sisquoc River currently cannot be quantified. Reestablishment and monitoring of these currently inactive gauges (Foxen, La Brea, and Tepusquet Creeks), as previously outlined in the SMVMA Monitoring Program and recommended in this annual report, would provide for better understanding of the distribution of recharge along the Sisquoc River.

Streamflow in the Santa Maria River has been recorded at two gauges during varying periods of time (see Figure 1.3-2). At the Guadalupe gauge, which was operational between 1941 and 1987, stream discharge ranged from no streamflow during numerous years to almost 185,000 af during 1941, and averaged 26,800 afy prior to the commencement of Twitchell project operations compared to 17,600 afy during the period of Twitchell project operations. The historical variation in Santa Maria River streamflow is shown in a bar chart of annual surface water discharge for the River (Figure 2.3-1c). The reduction in streamflow at Guadalupe is attributed to Twitchell project operations, which are intended to maximize recharge along the more permeable portion of the River streambed by managing reservoir releases to maintain a “wetline” (downstream extent of streamflow) near the Bonita School Road Crossing.

Supplemental recharge to the Santa Maria Valley from Twitchell project operations has been estimated to be about 32,000 afy based on comparison of pre- and post-project net losses in streamflow between Garey and Guadalupe (LSCE, 2000). The estimation does not account for changes in climatic conditions between the pre- and post-project periods or losses/gains along the Santa Maria River due to other processes, which could result in changes in the amount of water available for recharge over time. As a result of discontinued stream discharge measurements at Guadalupe since 1987, combined with the lack of gauges on Suey and Nipomo Creeks, the net amount of groundwater recharge in the Santa Maria Valley from the Santa Maria

River currently cannot be updated. Reestablishment and monitoring of these currently inactive gauges (Suey Creek, Nipomo Creek, and Santa Maria River at Gaudalupe), as previously outlined in the SMVMA Monitoring Program and recommended in this annual report, would provide for better understanding of the distribution of streamflow and recharge along the Santa Maria River.

Stream discharge in the Santa Maria River has also been recorded more recently at a gauge at Suey Crossing northeast of the City of Santa Maria. However, these data are reported only sporadically, as for years 1999 and 2006, or not at all, as in 2000 through 2005. The discharge data for 2009 were unavailable for review for this report (the data are currently listed as awaiting quantification by rating curve). Future acquisitions of the discharge data from this gauge will also enhance an understanding of streamflow and recharge along the Santa Maria River.

Stream discharge in Orcutt Creek, recorded from 1983 through the present (absent years 1992 through 1994), averages about 1,600 afy, ranging from essentially no streamflow during several years to just over 10,000 af in 1995; in 2009, streamflow was less than 1,000 af. The historical variation in streamflow is shown in a bar chart of annual surface water discharge for the creek (Figure 2.3-1d). While essentially all streamflow recorded at the gauge ultimately provides groundwater recharge to the SMVMA, it is not known how much groundwater recharge or discharge occurs upstream from the gauge, specifically between the point where Orcutt Creek enters the SMVMA and the gauge.

### **2.3.2 Surface Water Quality**

The majority of recharge to the SMVMA has historically derived from streamflow in the Santa Maria River originating from the Cuyama and Sisquoc Rivers. Thus, groundwater quality in much of the SMVMA has historically reflected the water quality of streamflows in the Cuyama and Sisquoc Rivers. Water quality in the rivers depends on the proportion and quality of the rainfall runoff and groundwater inflow contributing to streamflow in their respective watersheds above the Santa Maria Valley. The Cuyama River watershed includes the Cuyama Valley, which is reported to be underlain by geologic formations containing large amounts of gypsum; the Sisquoc River watershed is primarily steep terrain underlain by consolidated rocks (USGS, Worts, G.F., 1951).

The quality of the streamflow in both the Cuyama and Sisquoc Rivers has historically been of a calcium magnesium sulfate type, although the Sisquoc River contains slightly less sulfate and more bicarbonate than the Cuyama River. The Cuyama River quality has improved at two points in time during the historical period, specifically the mid-1940's and the late 1960's (USGS, Hughes, J.L., 1977). The improvement observed in the mid-1940's is thought to be due to agricultural development of the Cuyama Valley that was supported by increased groundwater pumping in that Valley for irrigation. The increased pumping lowered groundwater levels in the Cuyama Valley, in turn reducing groundwater inflow to the Cuyama River, thereby reducing the contribution of dissolved salts (sulfate in particular) to the River. The improvement observed in the late 1960's is thought to be due to implementation of Twitchell Reservoir project operations, which facilitated conservation of Cuyama River runoff and augmented recharge to the Santa Maria Valley groundwater basin. Specifically, the higher streamflow events in the Cuyama

River that previously discharged to the ocean are of a better quality due to dilution by greater rainfall runoff. Releases from Twitchell Dam therefore contain a lower amount of dissolved salts than the Cuyama River streamflows from the period preceding the project. The improvement in Cuyama River water quality from both of these developments is summarized in Table 2.3-1. More recent water quality data for the River were unavailable for review for this report.

**Table 2.3-1**  
Selected General Mineral Constituent Concentrations  
Cuyama River below Twitchell Reservoir  
(USGS, Hughes, J.L., 1977)

<u>Constituent</u>	<u>Years</u> <u>1906 and 1941</u>	<u>Years</u> <u>1958 - 1966</u>	<u>Years</u> <u>1967 - 1975</u>
Specific Conductance (umho/cm)	1,700 - 4,500	1,300 - 2,400	750 - 2,100
Sulfate (mg/l)	700 - 1,700	450 - 700	190 - 550
Chloride (mg/l)	90 - 140	50 - 100	25 -85

Water quality in the Sisquoc River likely has remained relatively unchanged since 1906 although much fewer historical data are available than for the Cuyama River. The water quality concentrations measured between 1940 and 1975 are lower than observed in the Cuyama River during any of the above periods of time, with approximately 1,100 umho/cm specific conductance, 350 mg/l sulfate, and 20 mg/l chloride (USGS, Hughes, J.L., 1977). Review of more recent water quality data indicate that specific conductance values have remained essentially unchanged, ranging from 900 to 1,200 umho/cm, from 1975 through to the present, as seen in a graph of Sisquoc River water quality (Figure 2.3-2a). The latter data have been collected essentially monthly, and a slight seasonal variation in specific conductance is visible in most years, with values increasing as discharge decreases. The Sisquoc River has also been monitored for nitrate since 1975 on an annual basis, with NO<sub>3</sub>-NO<sub>3</sub> concentrations at or below reporting limits.

The Sisquoc River data described above were collected at the upstream gauge (near Sisquoc) at the point where the river enters the Sisquoc plain and, thus, do not fully describe the quality of flows entering the Santa Maria Valley further downstream near Garey. Limited historical water quality data for the Sisquoc River near Sisquoc and near Garey, and for its tributary streams, indicate that the quality of streamflows entering the Sisquoc plain are slightly improved by tributary inflows (USGS, Hughes, J.L., 1977).

In contrast to the quality of streamflows in the Cuyama and Sisquoc Rivers, the quality of Orcutt Creek flows is highly degraded, with specific conductance values typically fluctuating between 1,100 and 3,500 umho/cm, with values exceeding 5,500 umho/cm in 2005 and 2006. Subsequently, specific conductance values declined to the previous range, as seen in a graph of Orcutt Creek historical water quality (Figure 2.3-2b). Orcutt Creek flows also became highly degraded by nitrate, with NO<sub>3</sub>-NO<sub>3</sub> concentrations remaining above the health-based standard of 45 mg/l since 2005 and exceeding 125 mg/l in 2007 through 2009.

An additional surface water monitoring point is on Green Canyon, a drainage canal that courses from south of Guadalupe westward and, with other small drainages, joins the Santa Maria River. Specific conductance values were 2,200 umho/cm in the late 1980's, after which they have greatly fluctuated between 900 and 3,100 umho/cm. Nitrate (as nitrate) concentrations ranged from 60 to 80 mg/l in the late 1980's and have since substantially increased to range between 100 and 200 mg/l. The seasonal and long-term trends in specific conductance and nitrate values are illustrated in a graph of Green Canyon historical water quality (Figure 2.3-2c).

## **2.4 Climate**

The climatic data reported for the SMVMA are characterized in this section, specifically the current conditions in relation to historical trends in precipitation and evapotranspiration data.

### **2.4.1 Precipitation**

Three precipitation gauges are located in the SMVMA, specifically at Guadalupe, Santa Maria (currently at the Airport and previously downtown), and Garey (see Figure 1.3-2). The average annual rainfall measured at the Santa Maria Airport gauge, the most centrally located of the three gauges, is 12.80 inches, as shown in a bar chart of historical precipitation (Figure 2.4-1). Historically, the majority of rainfall occurs during the months of November through April, and this was the case during 2009. Total rainfall for calendar year 2009 was 9.84 inches, below the long-term average of 12.80 inches; almost one-half of the 2009 annual total, 4.68 inches, occurred during the month of February alone, with the balance primarily in October and December, as shown in Table 2.4-1.

Long-term rainfall characteristics for the SMVMA are reflected by the cumulative departure curve of historical annual precipitation (on Figure 2.4-1), which indicates that the SMVMA has generally experienced periods of wetter than normal conditions alternating with periods of drier than normal to drought conditions. Wet conditions prevailed from the 1930's through 1944, followed by drier conditions from 1945 through the late 1960's. Subsequently, there have been shorter periods of alternating wet and dry conditions, including the most recent cycle of a wet period in the early-1990's to 1998, followed by the current period of slightly dry conditions that began in 2001. This pattern of fluctuations in climatic conditions closely corresponds to the long-term fluctuations in groundwater levels described in section 2.1.2, including the substantial decline observed between 1945 and the late 1960's and the subsequent repeating cycle of decline and recovery between historical-low and historical-high groundwater levels.

### **2.4.2 Evapotranspiration**

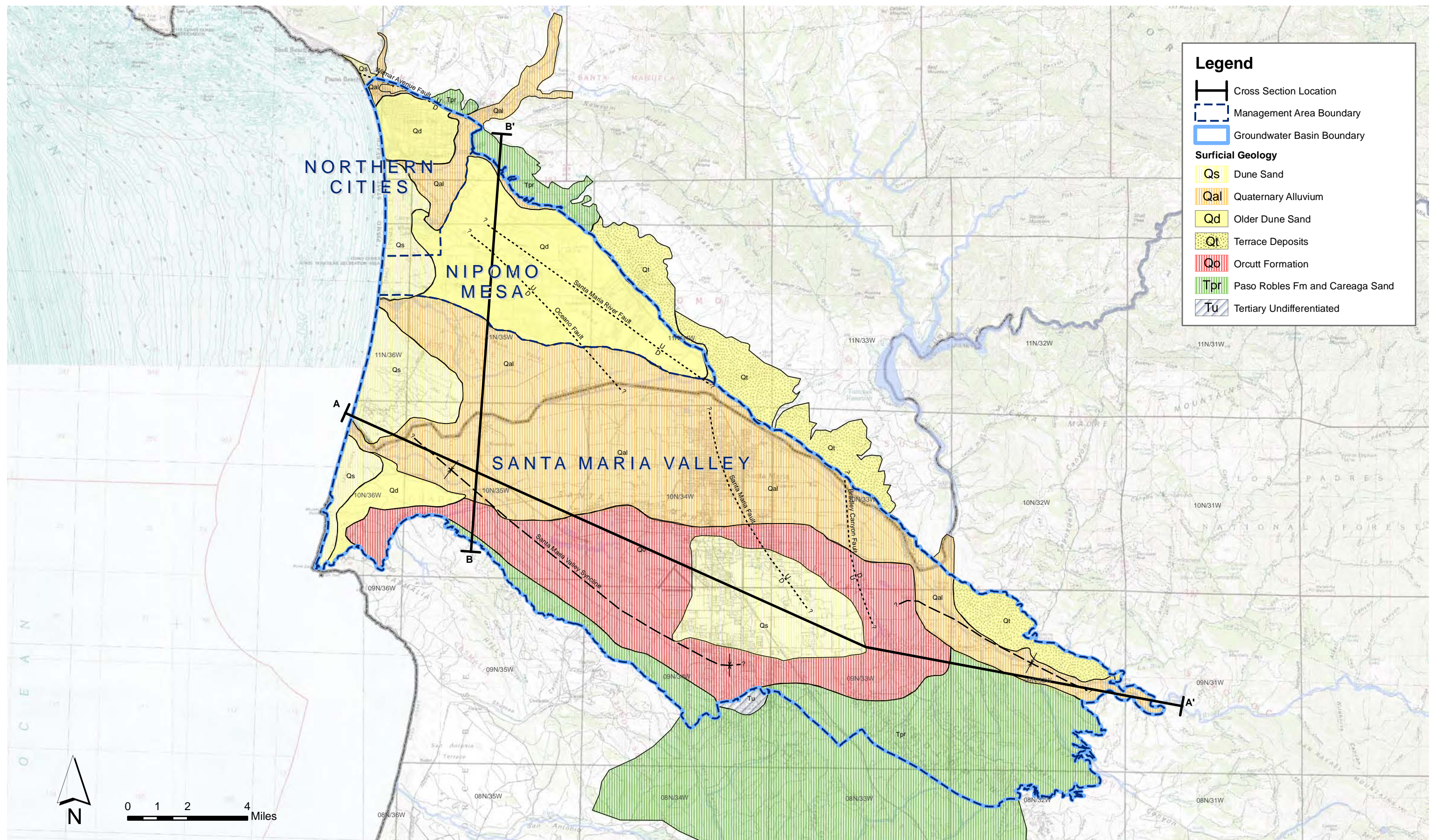
Three CIMIS climate stations were initially operated within the SMVMA for varying periods of time, specifically at Santa Maria, Betteravia, and Guadalupe between 1983 and 1997 (see Figure 1.3-2). Subsequently, CIMIS stations began operating near Sisquoc and on the southern Nipomo Mesa, the latter located just outside of the SMVMA, with climate data available for full calendar years beginning in 2001 and 2007, respectively. These five stations have recorded daily reference evapotranspiration (ET<sub>o</sub>) and precipitation amounts, with annual ET<sub>o</sub> values typically

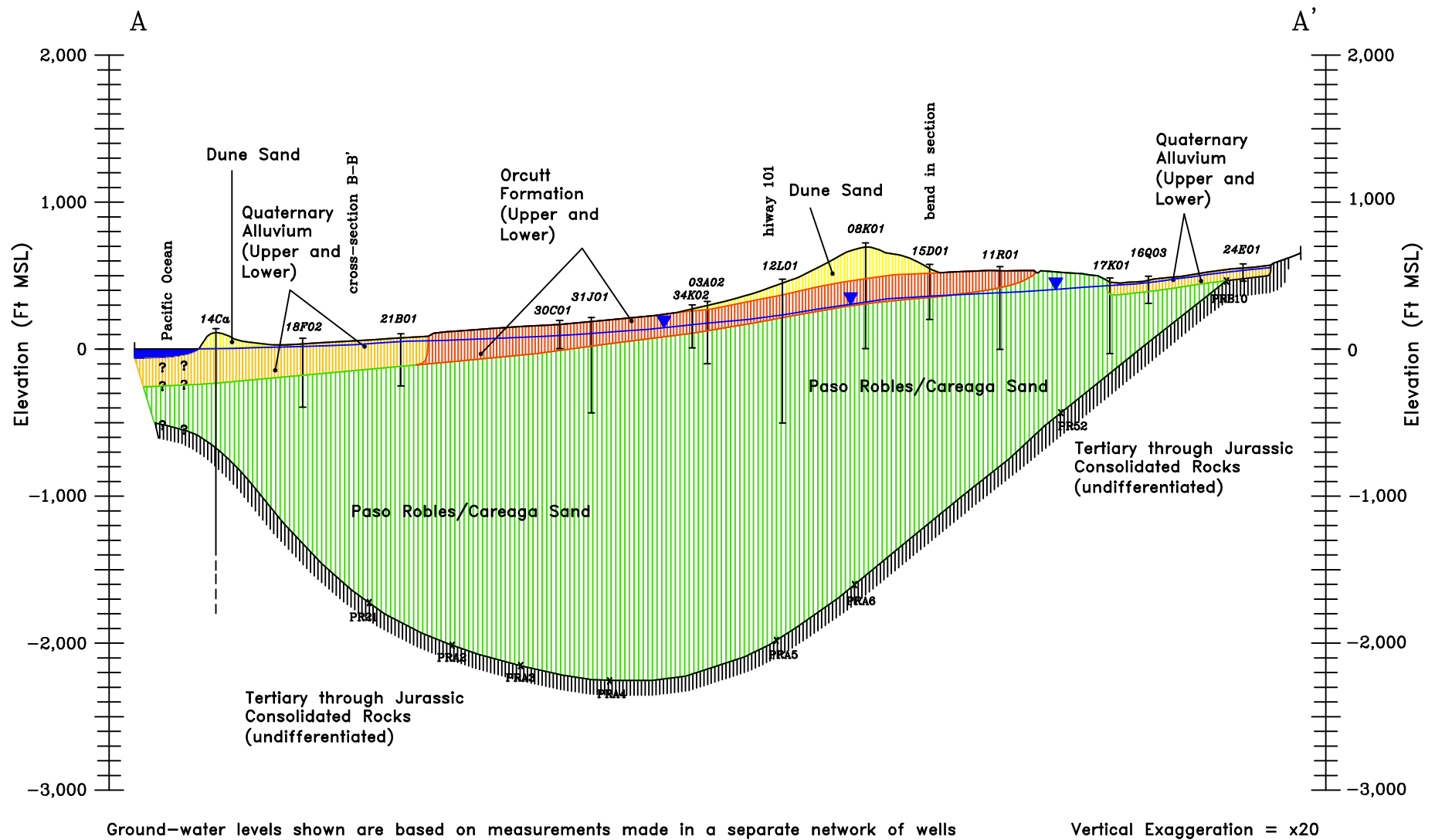
ranging between 43 and 53 inches and averaging 48.5 inches, as shown in a bar chart of the historical ETo values for the SMVMA (Figure 2.4-2).

Daily climate data for 2009 from the Nipomo and Sisquoc stations are listed in Table 2.4-2, which shows that annual ETo and precipitation amounts were 43.48 and 8.66 inches, respectively, at Nipomo and 44.54 and 19.86 inches, respectively, at Sisquoc.

Evapotranspiration was highest during the months of April through August at both stations. The 2009 precipitation recorded at the Nipomo station, 8.66 inches, was by far the most similar to the amount observed at the Santa Maria Airport precipitation gauge, 9.84 inches. In contrast, the precipitation recorded at the Sisquoc station was more than double that observed at the Airport gauge. For this reason, and as described in the next chapter, the 2009 precipitation from the Airport gauge and the average of the ETo data recorded at the Nipomo and Sisquoc stations were utilized in the estimation of agricultural water requirements for the SMVMA in 2009.

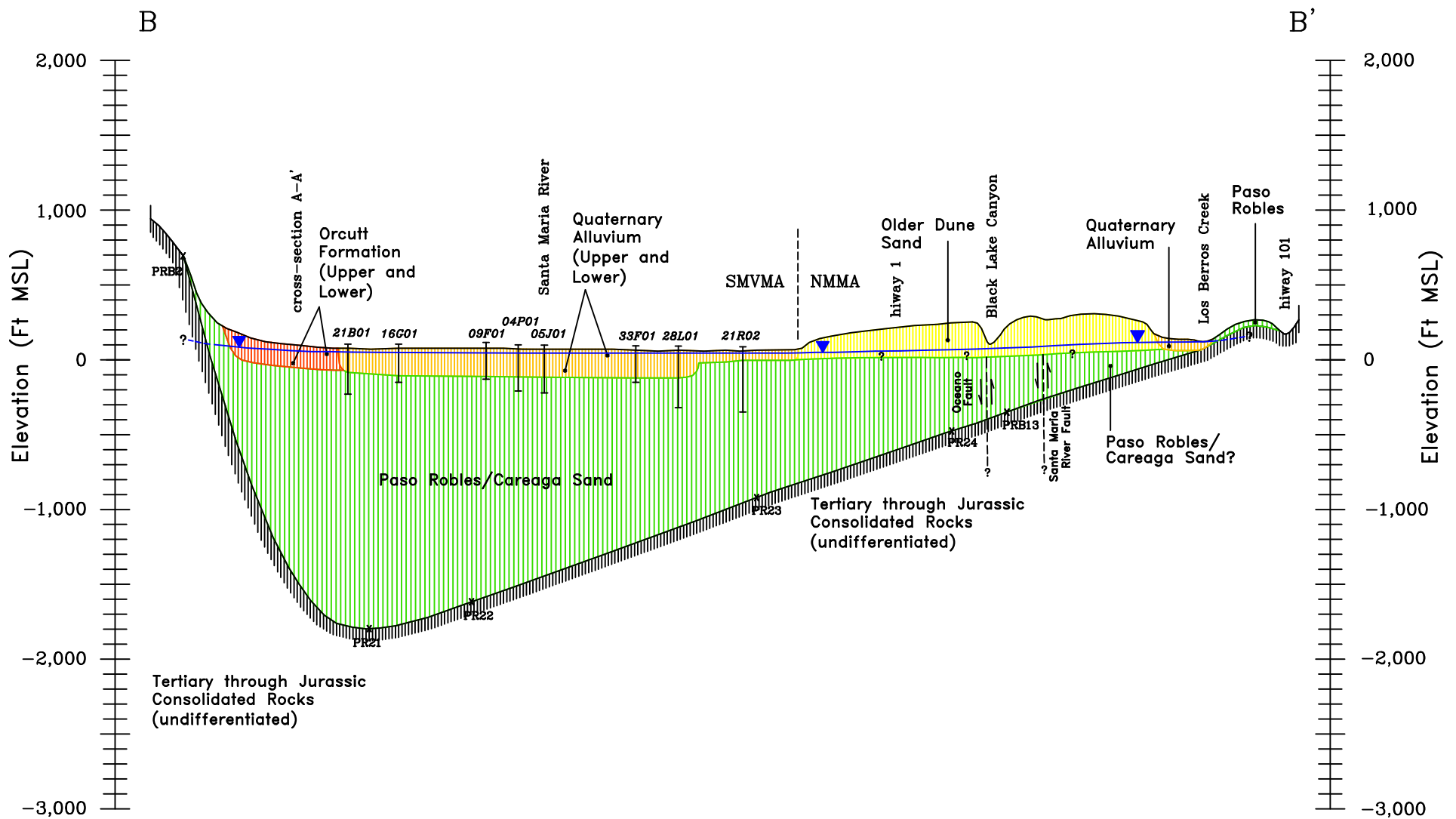
Reestablishment and monitoring of a CIMIS climate station on the floor of the Santa Maria Valley, as previously outlined in the SMVMA Monitoring Program and recommended in this annual report, will provide for enhanced estimation of agricultural water requirements in the SMVMA. The TMA began to implement this goal in 2009 through coordination with DWR staff to designate a CIMIS station location near the Santa Maria Airport, along with design specifications and associated installation costs.



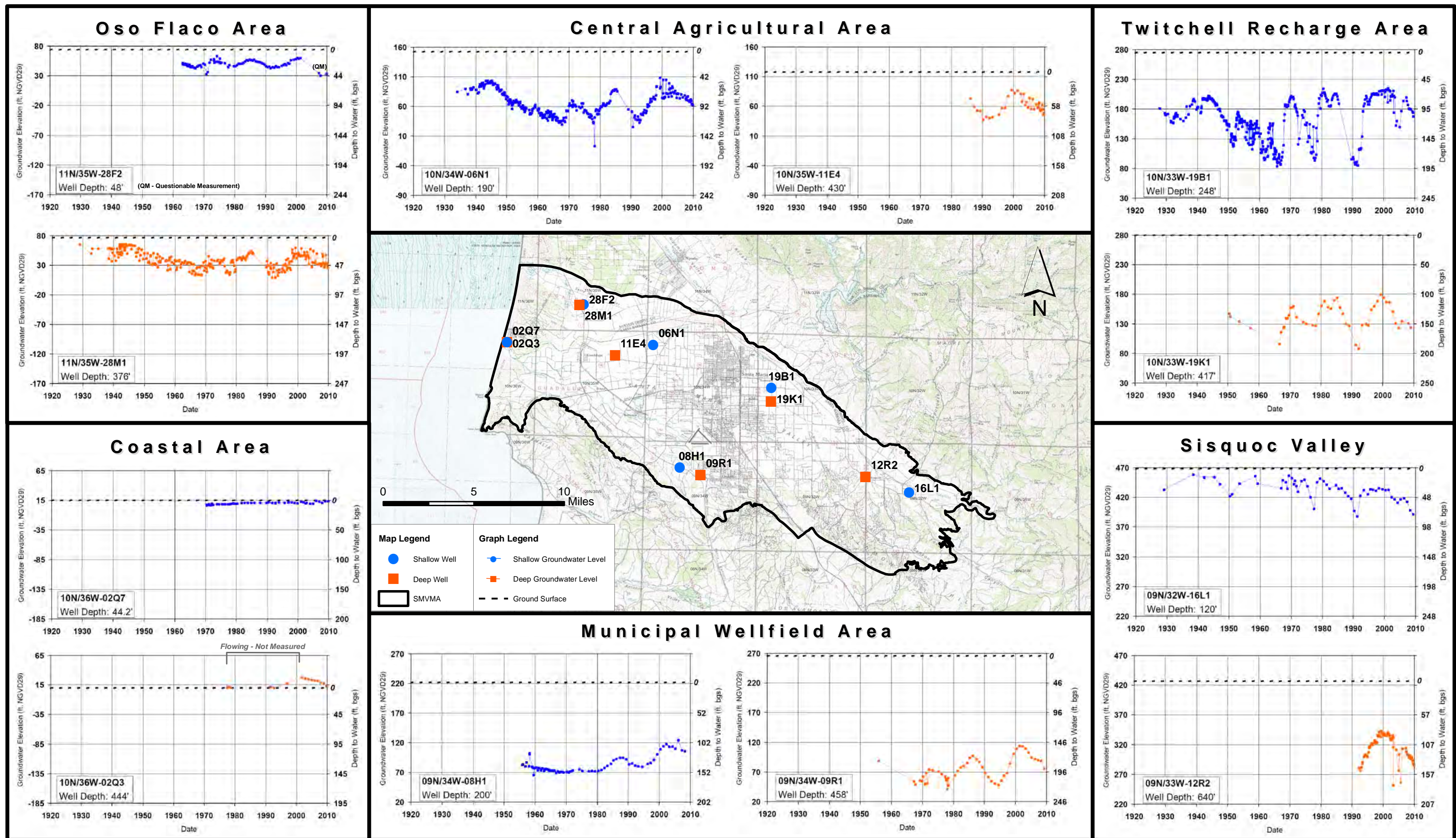


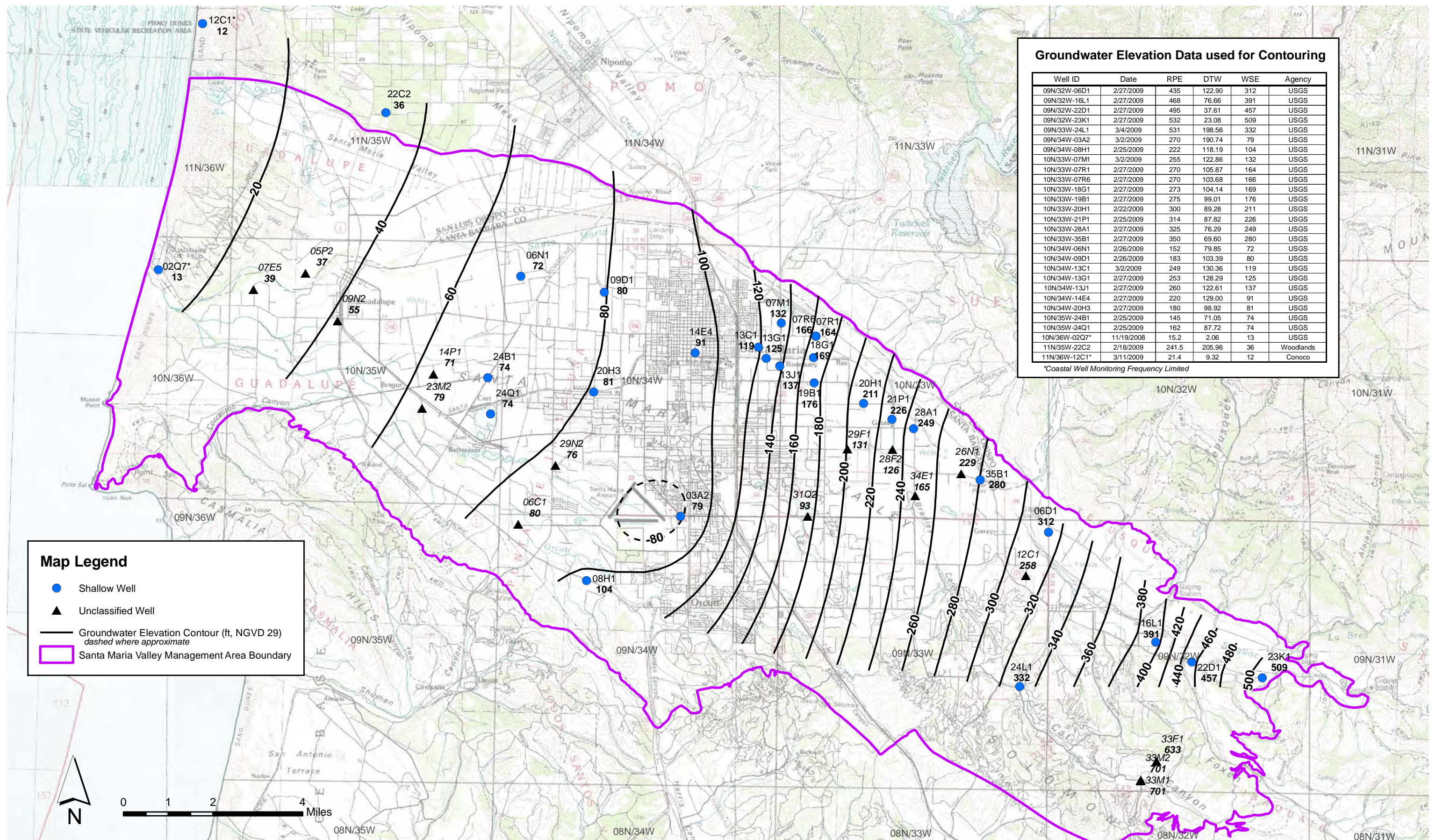
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**Figure 2.1-1b**  
**Longitudinal Geologic Cross Section, A-A'**  
**Santa Maria Valley Management Area**

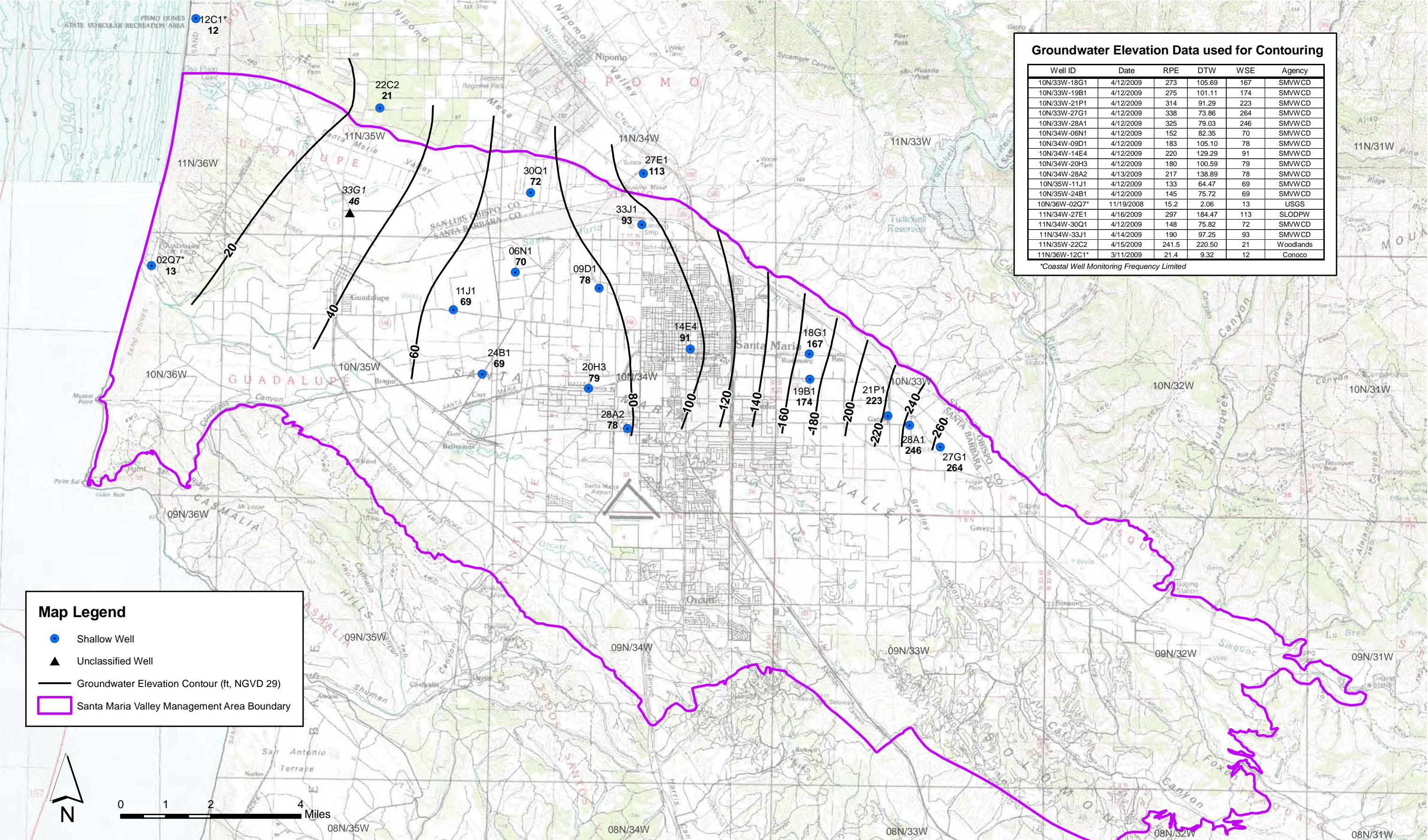


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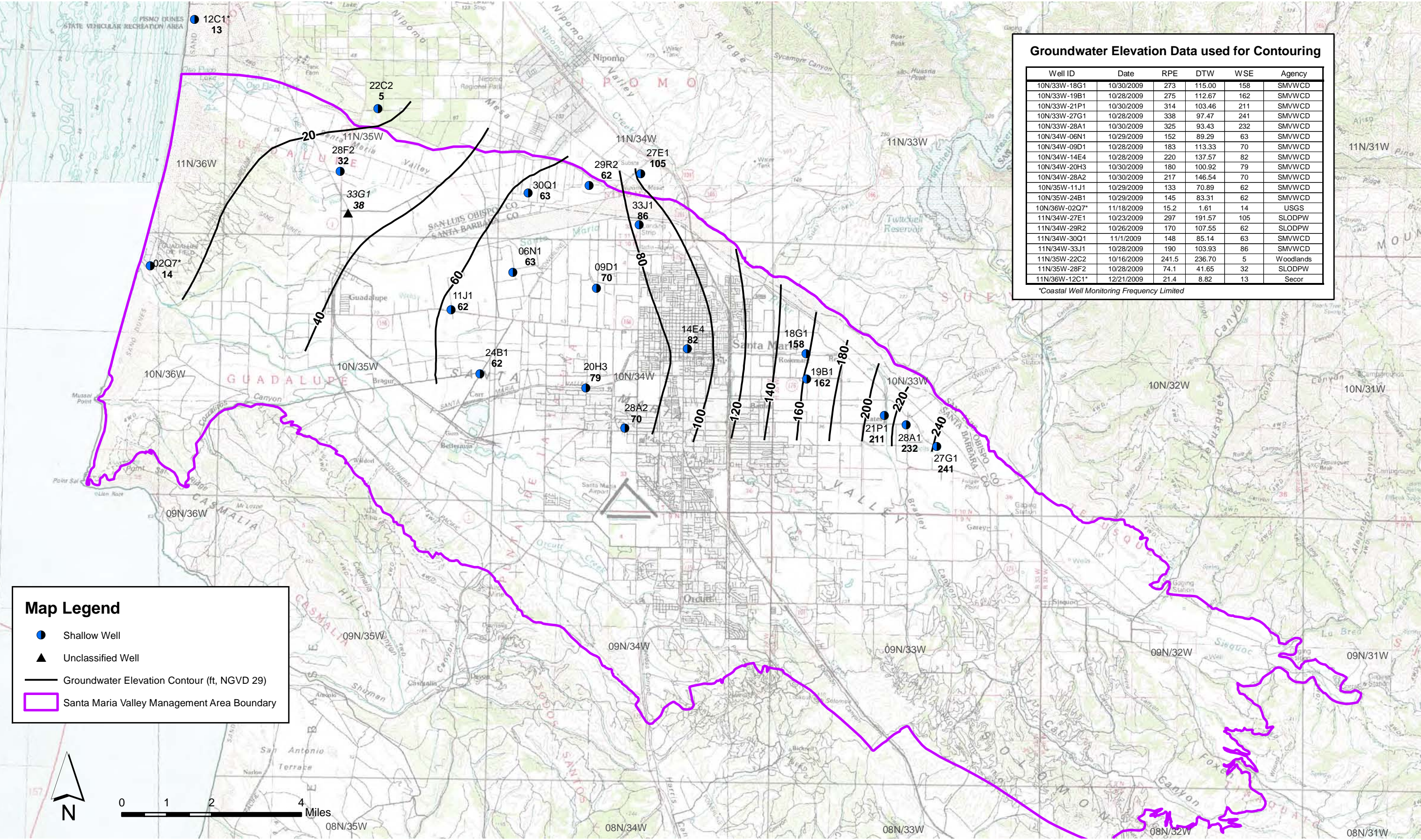




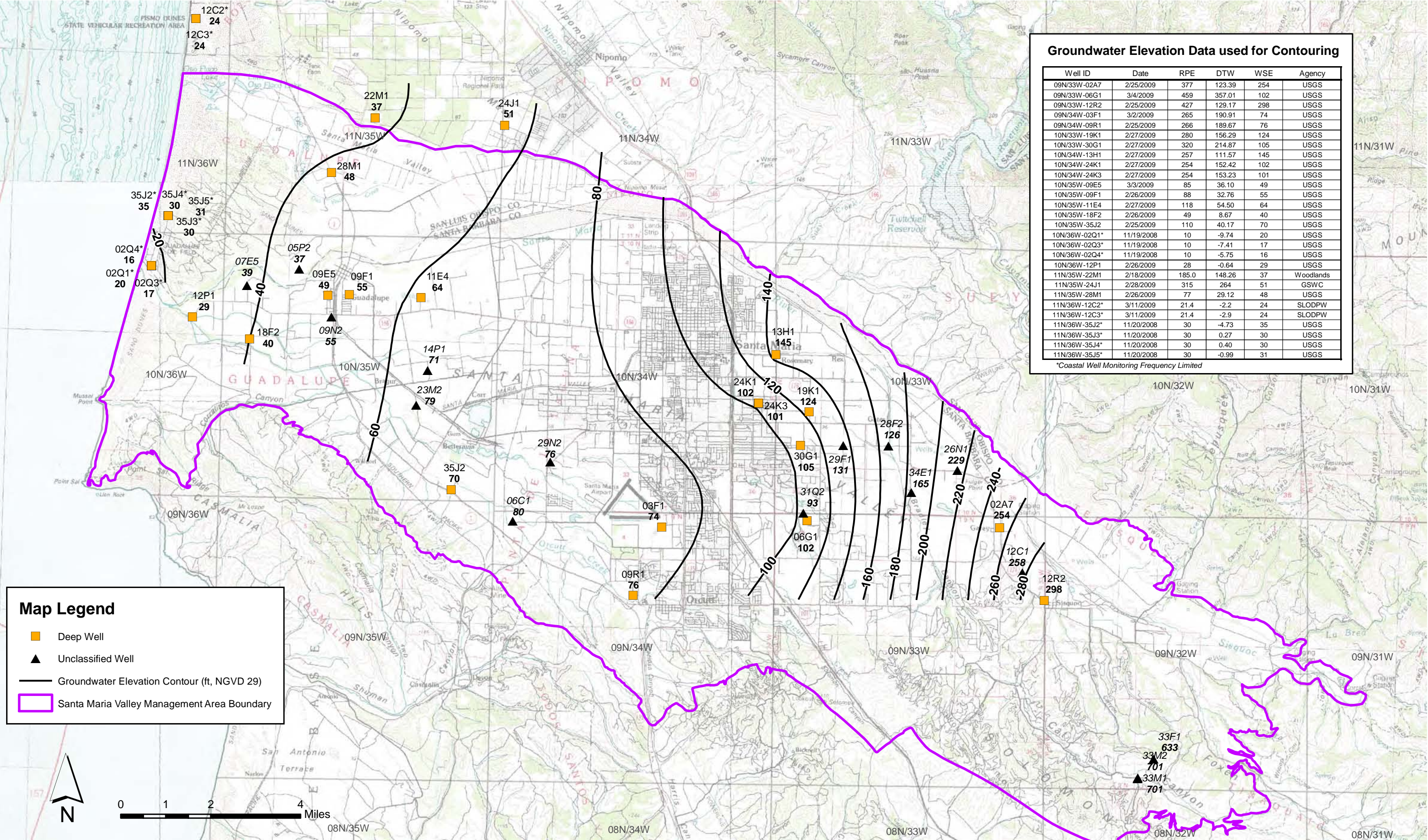
**Figure 2.1-3a**  
**Contours of Equal Groundwater Elevation, Shallow Zone, Early Spring (February 18 - March 4) 2009**  
**Santa Maria Valley Management Area**



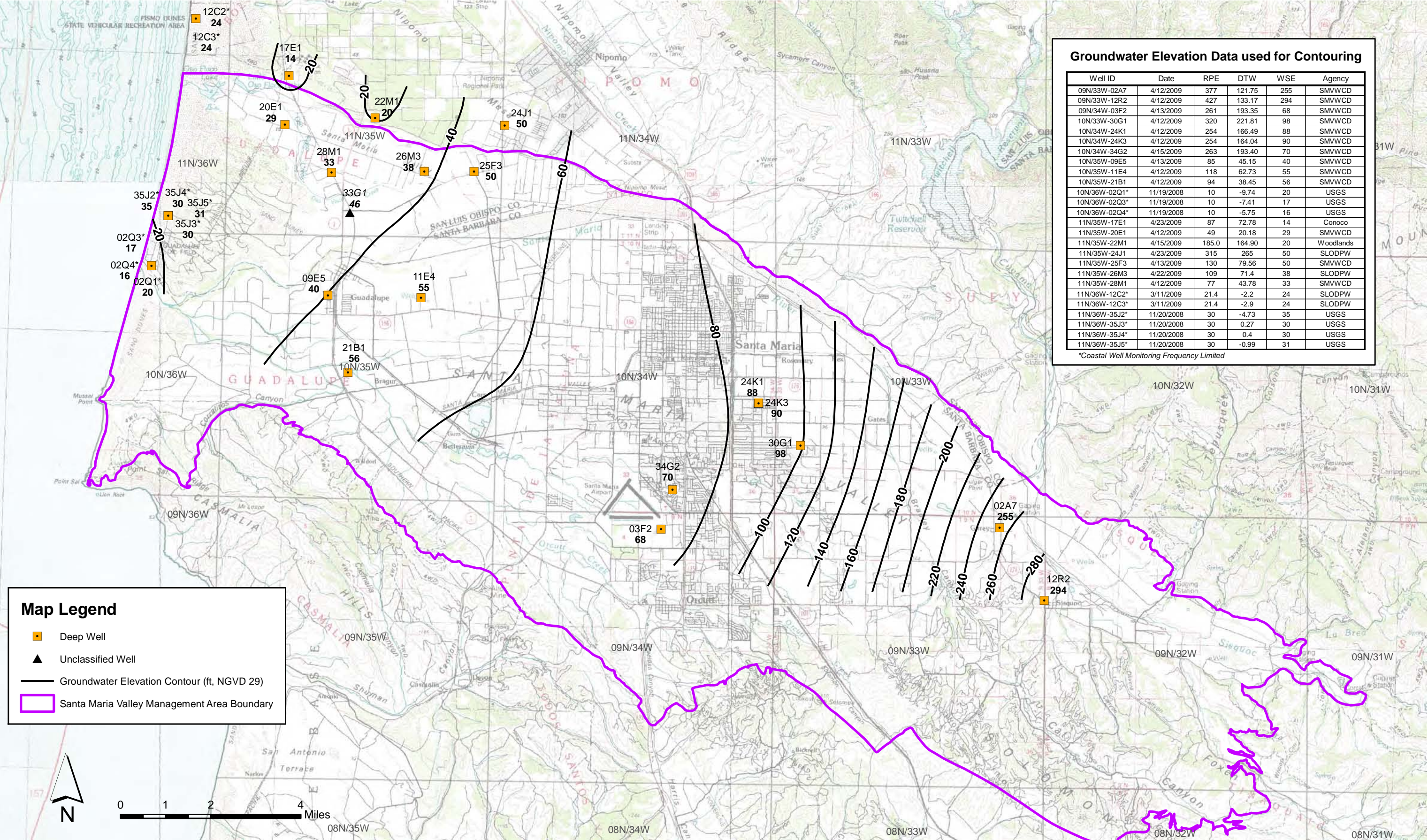
**Figure 2.1-3b**  
**Contours of Equal Groundwater Elevation, Shallow Zone, Late Spring (April 12 - 16) 2009**  
**Santa Maria Valley Management Area**



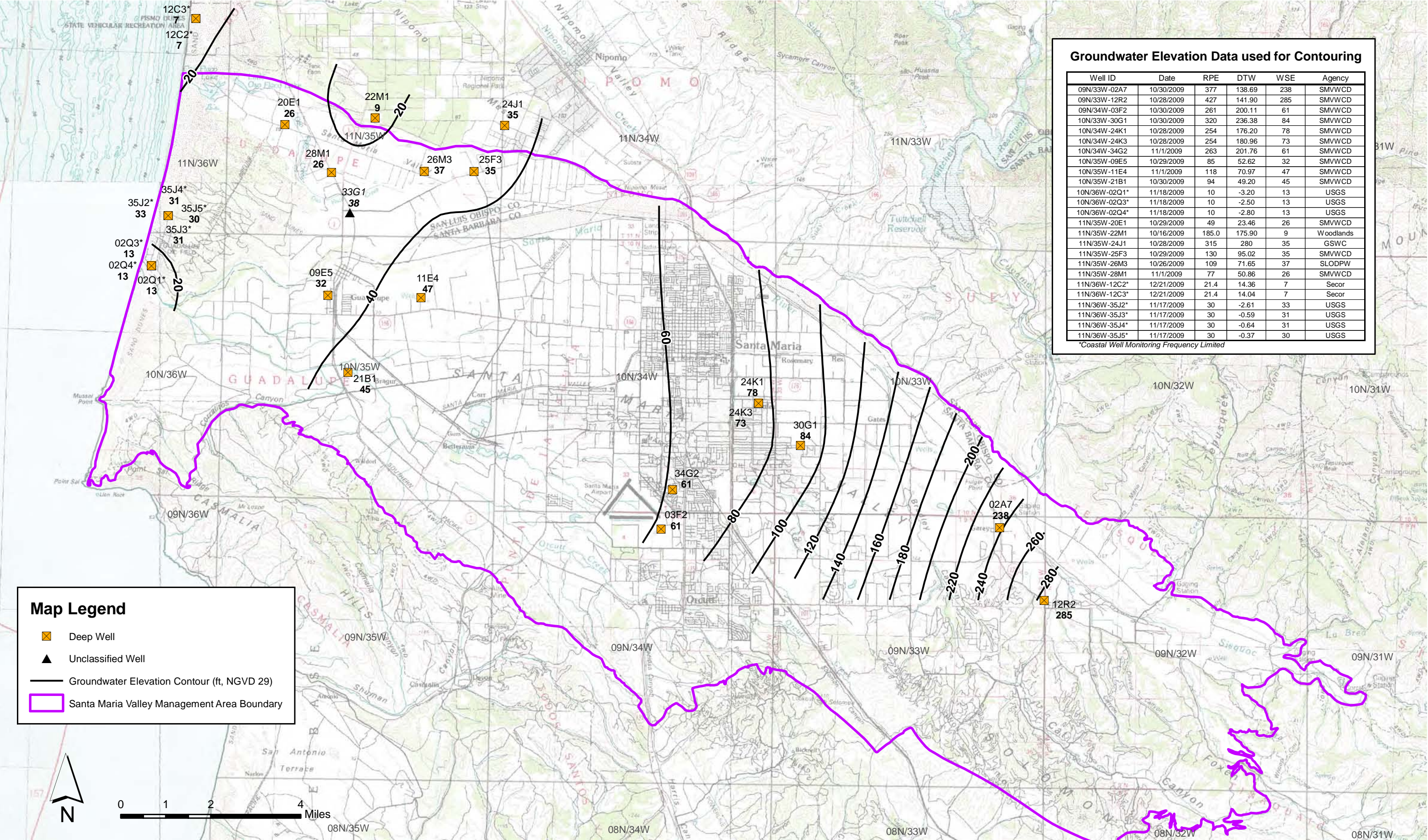
**Figure 2.1-3c**  
**Contours of Equal Groundwater Elevation, Shallow Zone, Fall (October 16 - November 1) 2009**  
**Santa Maria Valley Management Area**



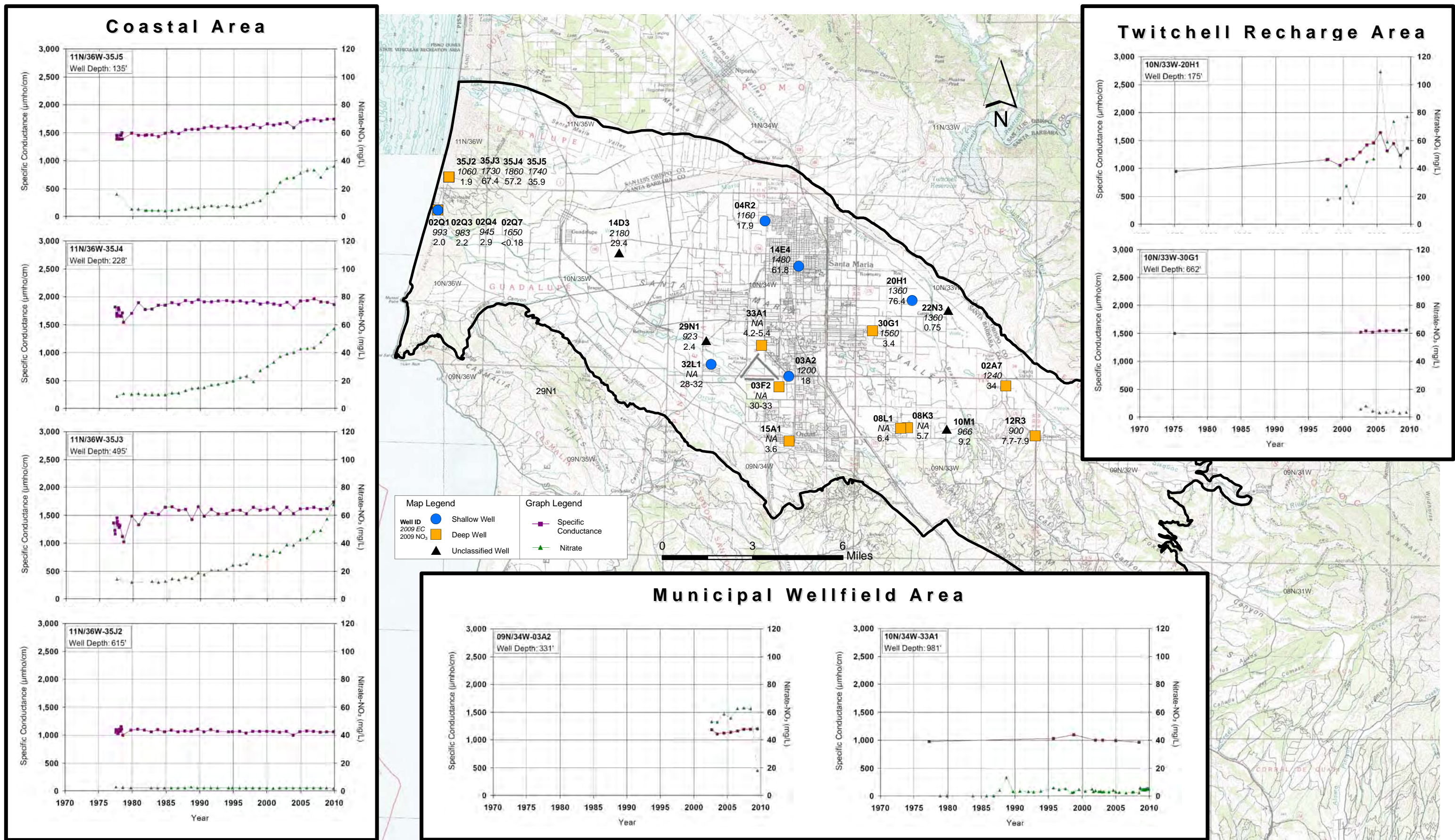
**Figure 2.1-3d**  
**Contours of Equal Groundwater Elevation, Deep Zone, Early Spring (February 18 - March 4) 2009**  
**Santa Maria Valley Management Area**

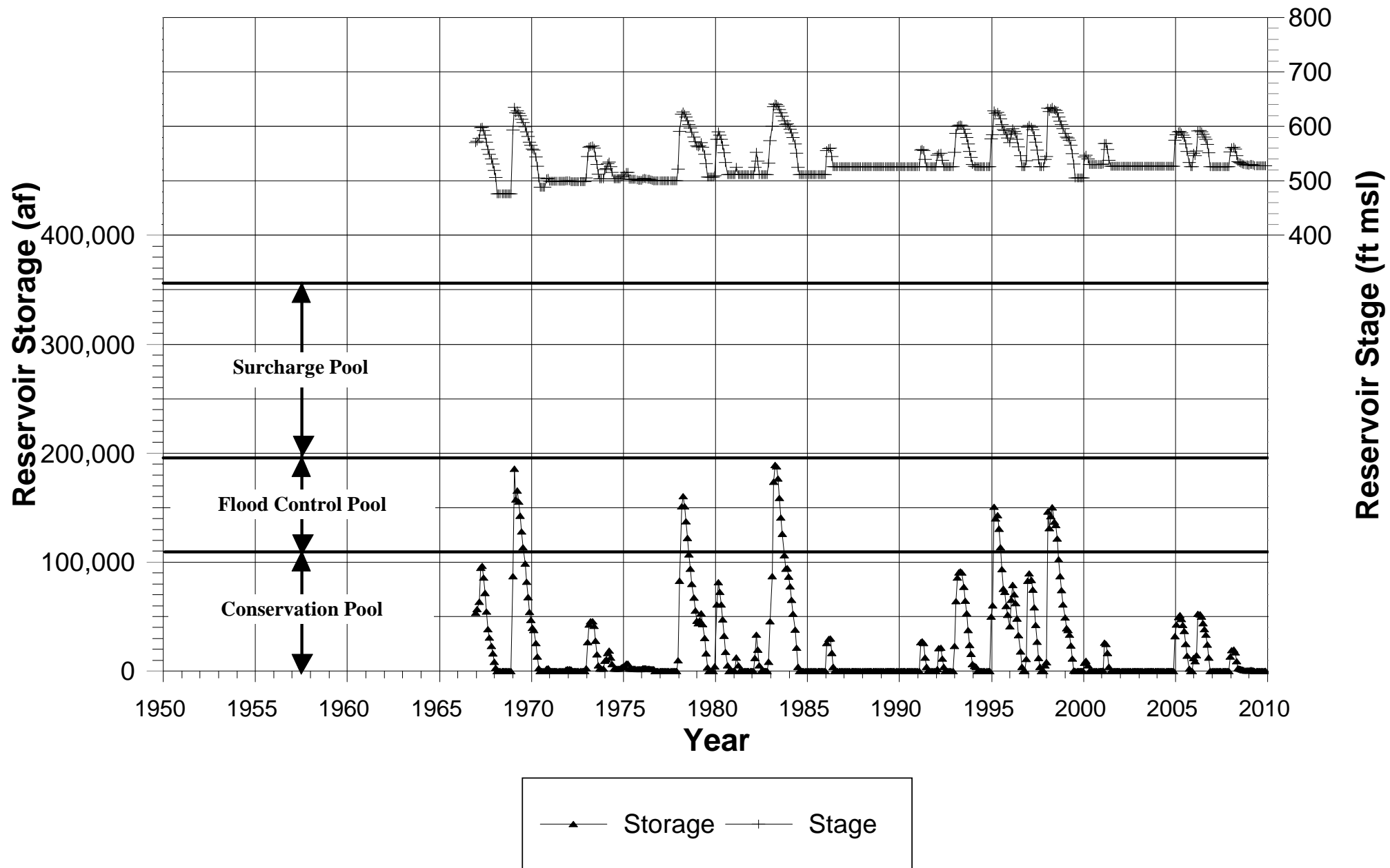


**Figure 2.1-3e**  
**Contours of Equal Groundwater Elevation, Deep Zone, Late Spring (April 12 - April 23) 2009**  
**Santa Maria Valley Management Area**



**Figure 2.1-3f**  
**Contours of Equal Groundwater Elevation, Deep Zone, Fall (October 16 - November 1) 2009**  
**Santa Maria Valley Management Area**



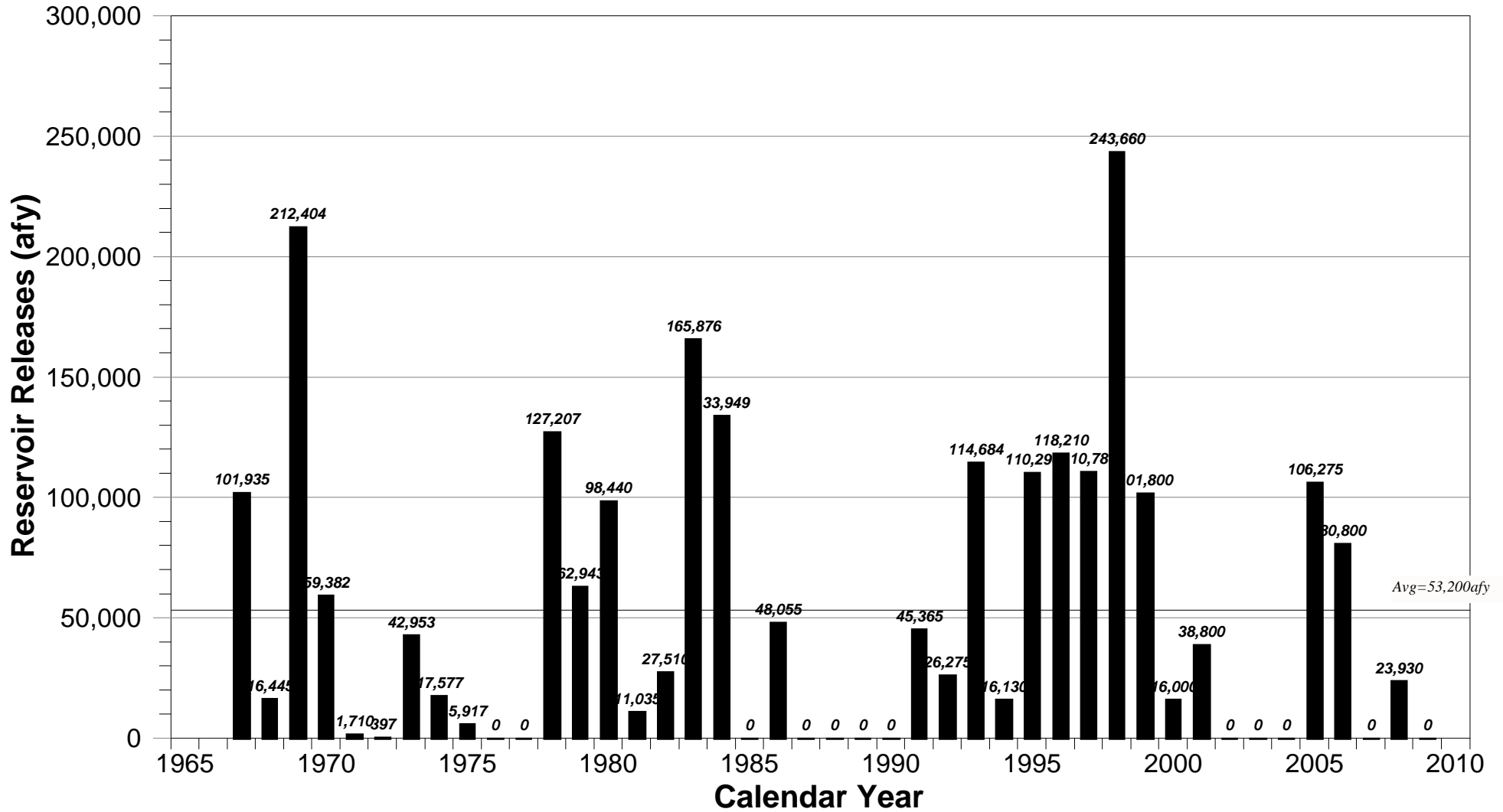


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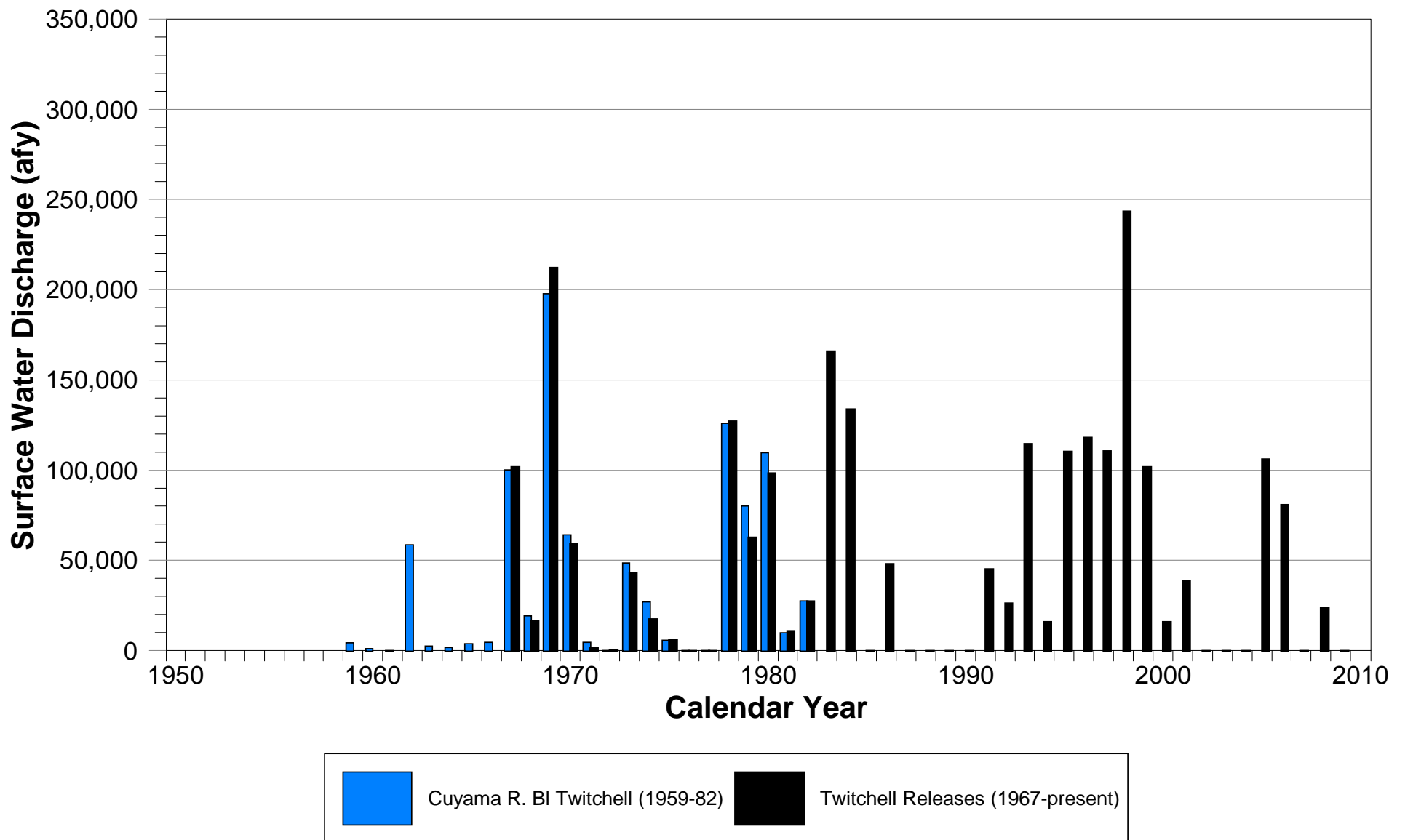


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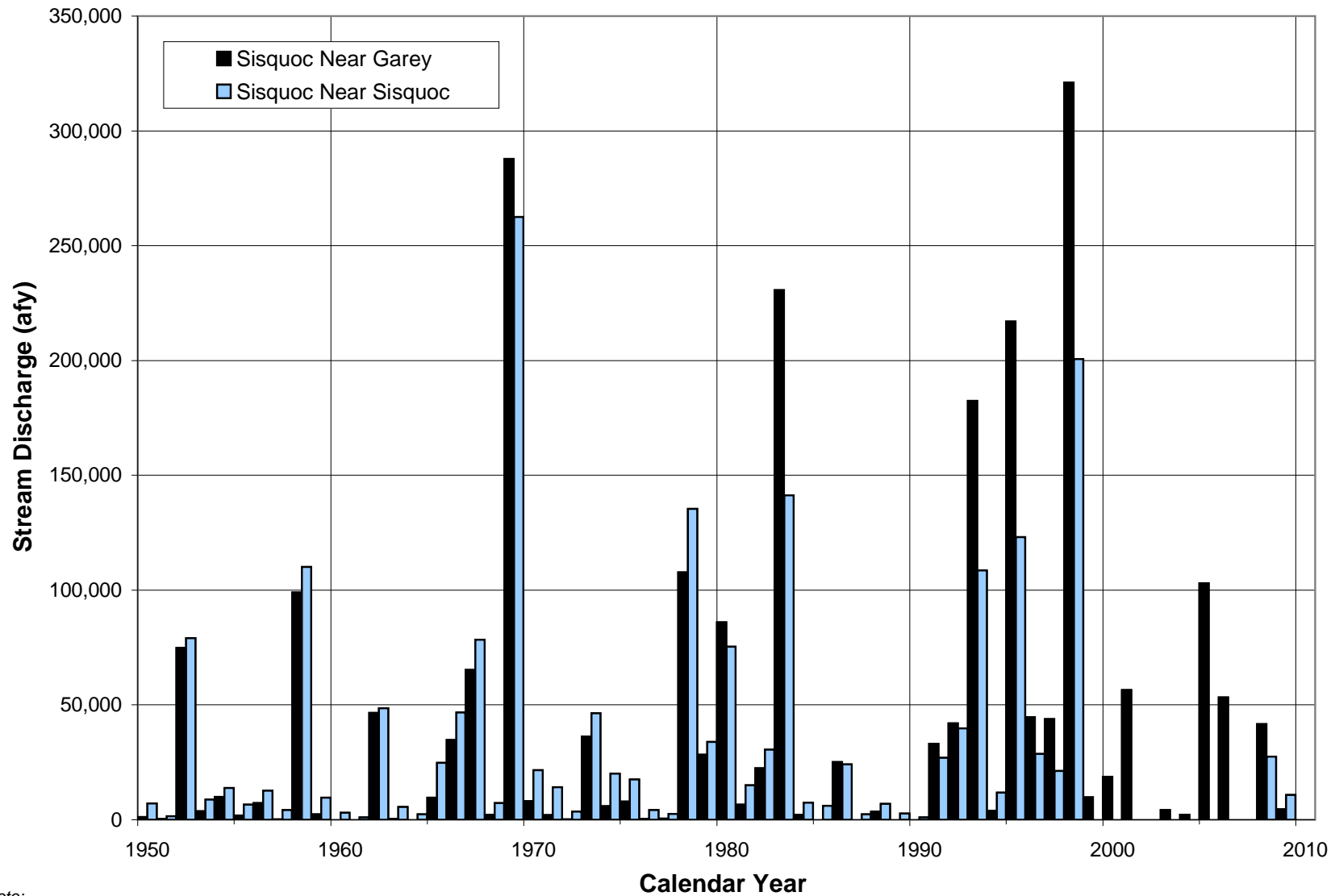
**Figure 2.2-1a**  
**Historical Stage and Storage, Twitchell Reservoir**  
**Santa Maria Valley Management Area**



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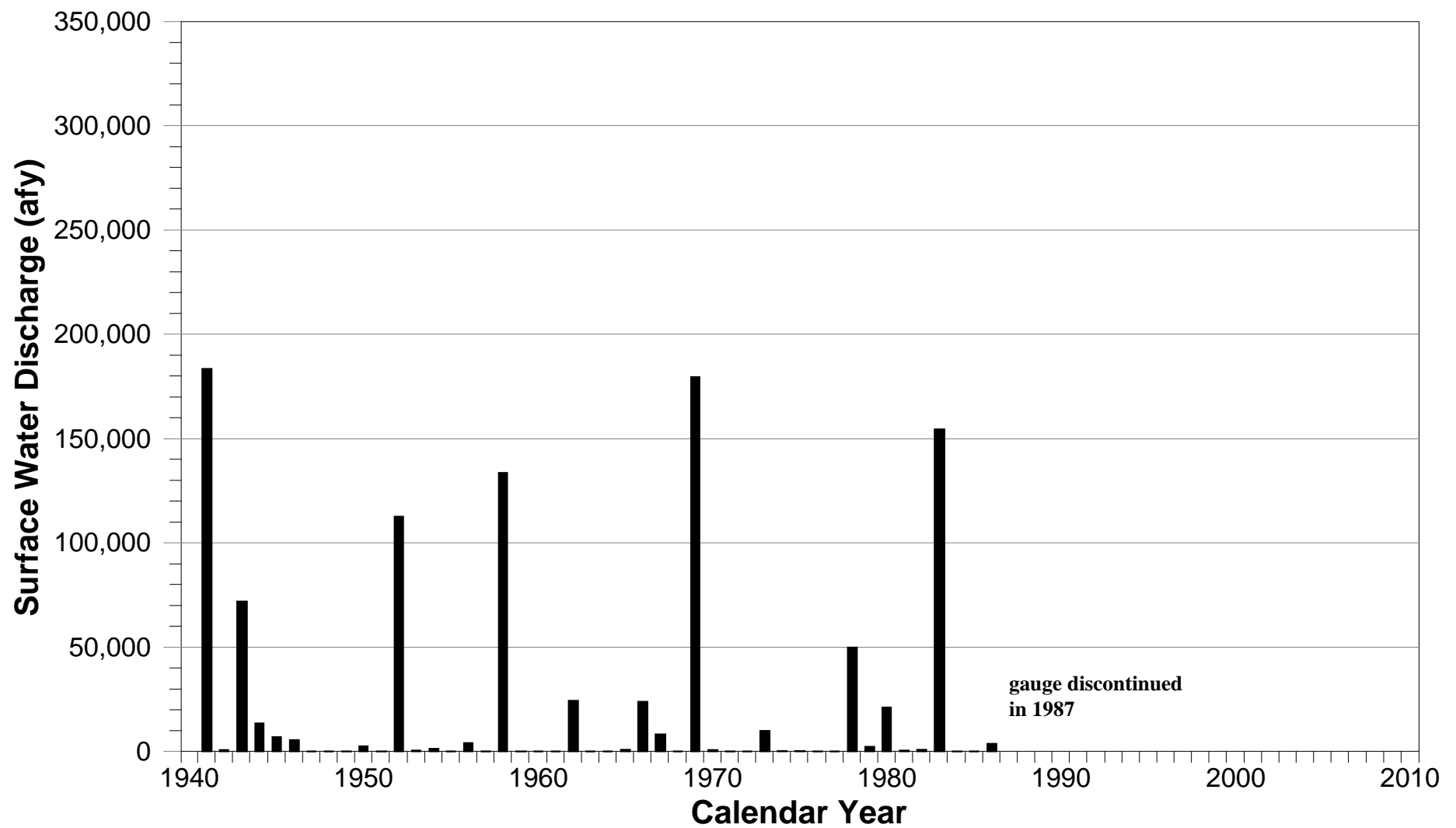
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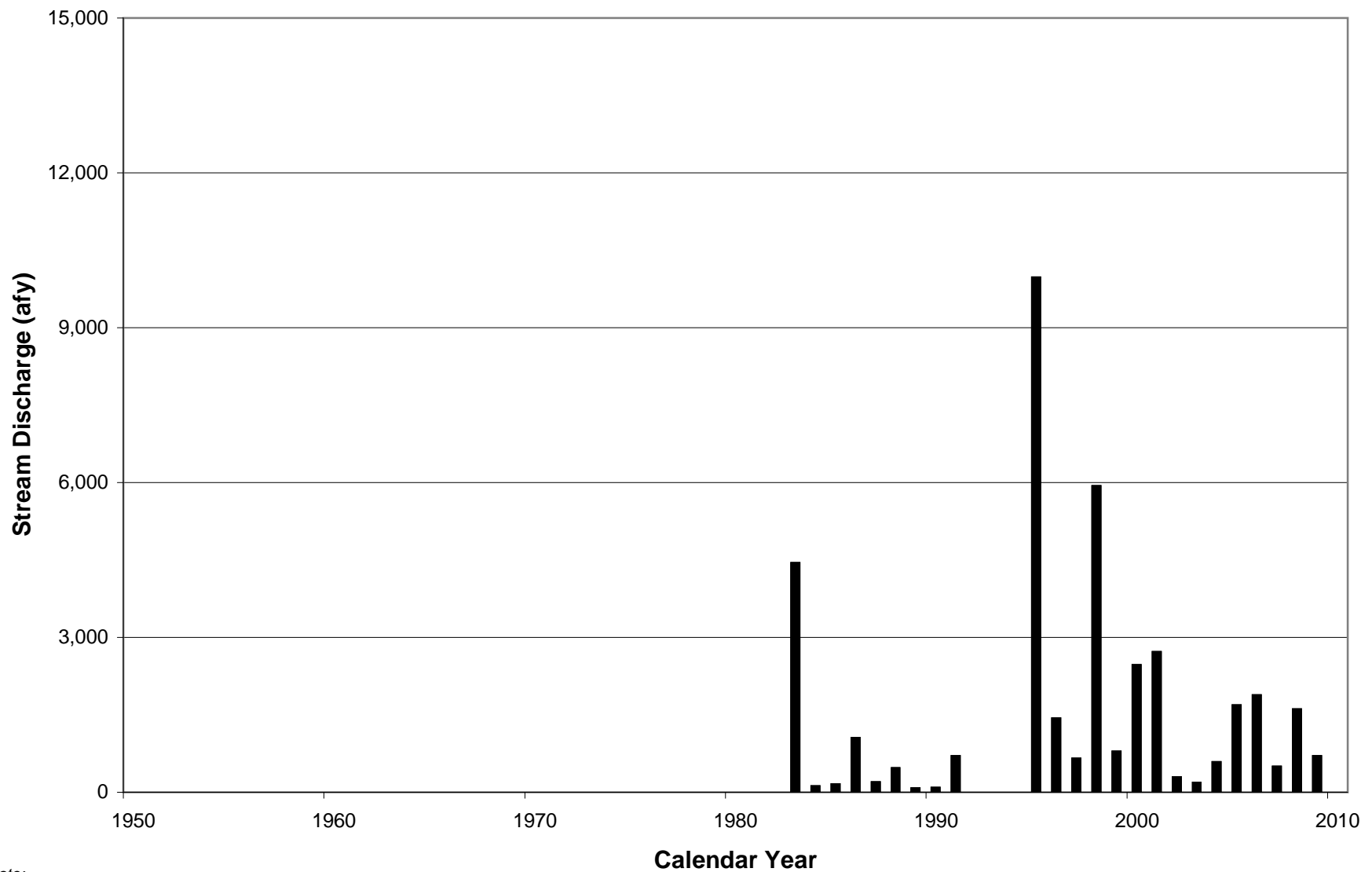


Note:

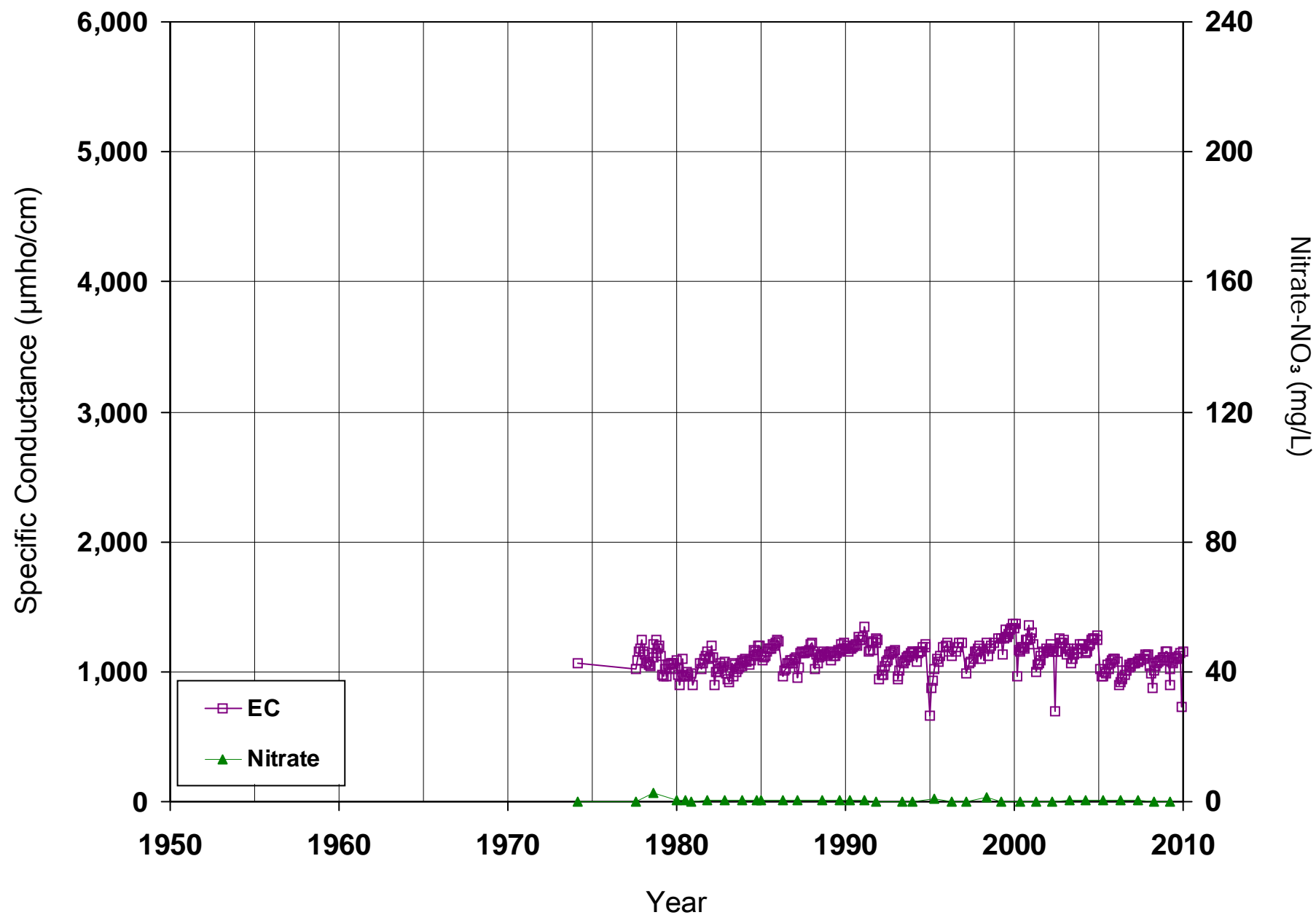
Discharge data are unavailable for the 'Near Sisquoc' Gauge from 1999-2007.

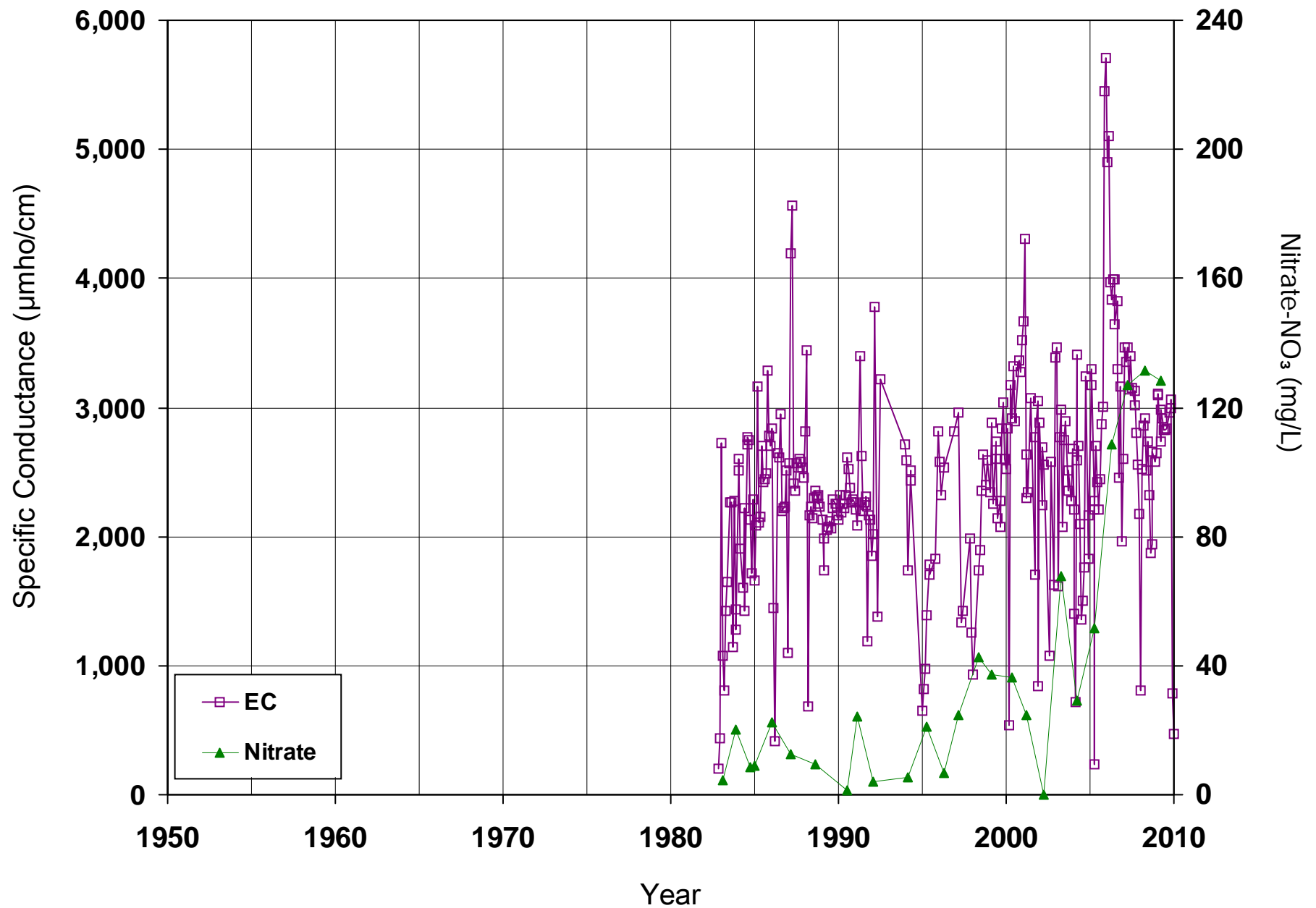
The 2009 discharge total for the 'Near Sisquoc' Gauge includes Approved data for Jan-Sep and Provisional data for Oct-Dec; the 'Near Garey' Gauge includes Approved data from Jan-Sep only, and the Oct-Dec data are currently unavailable.

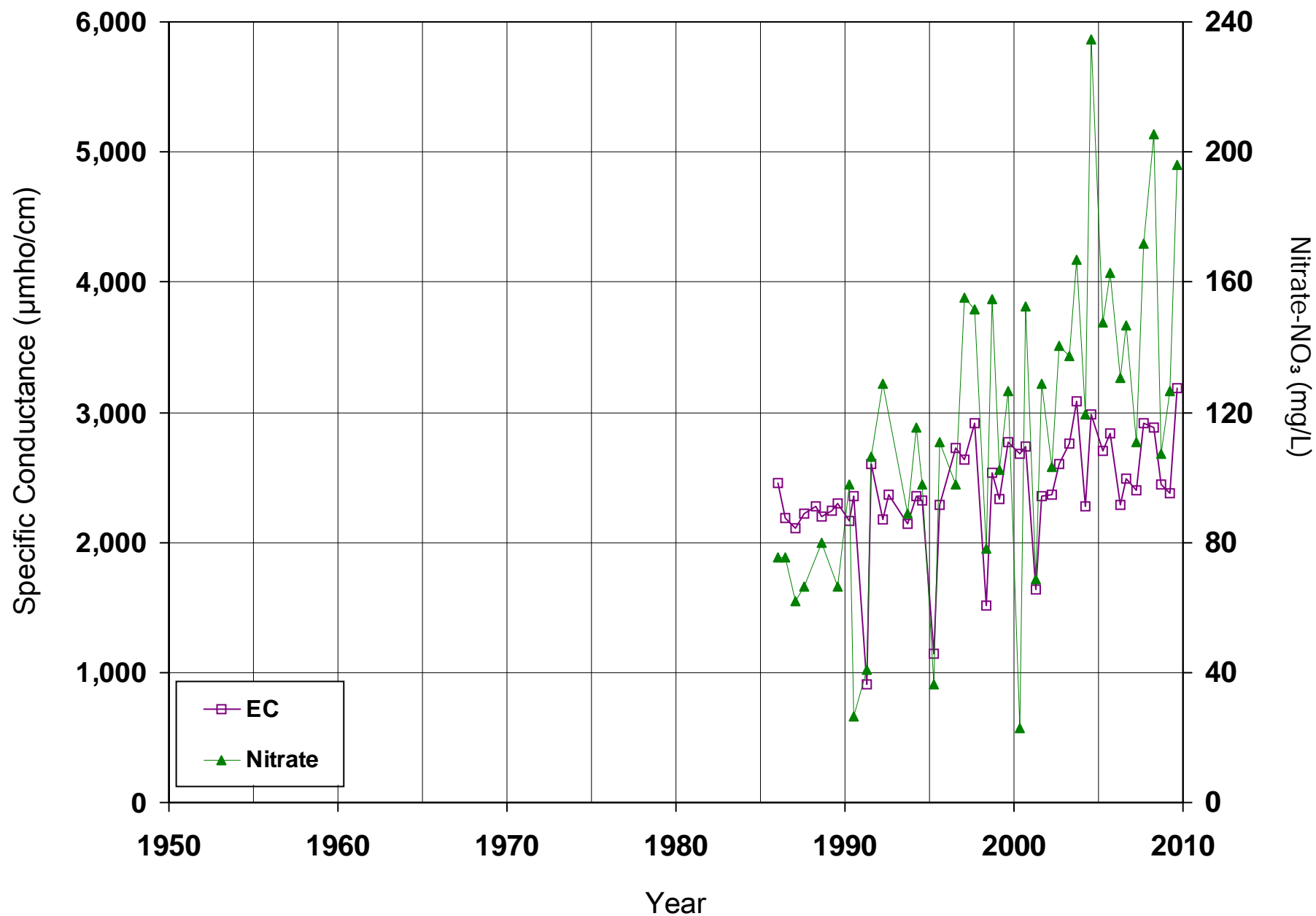


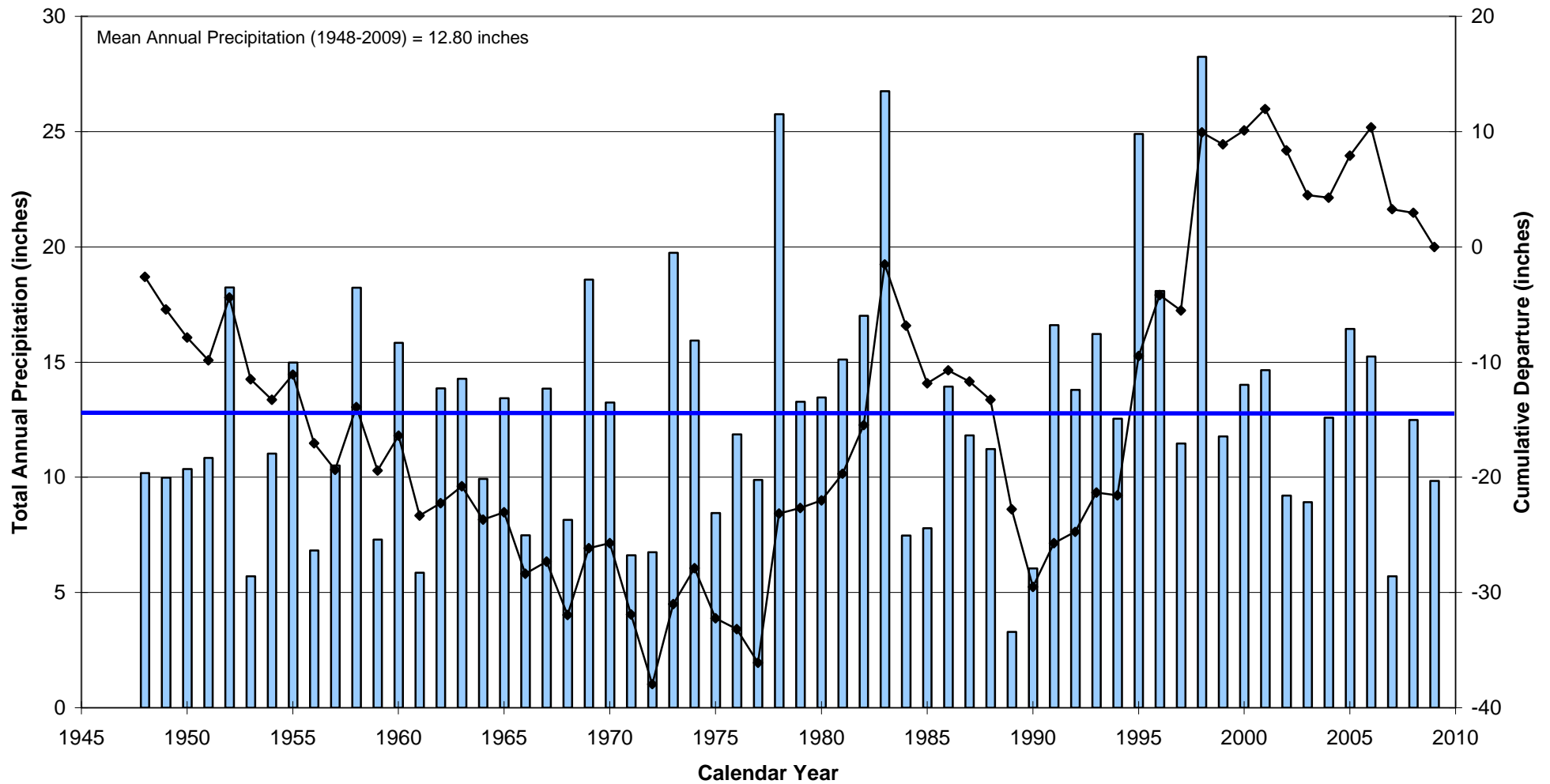


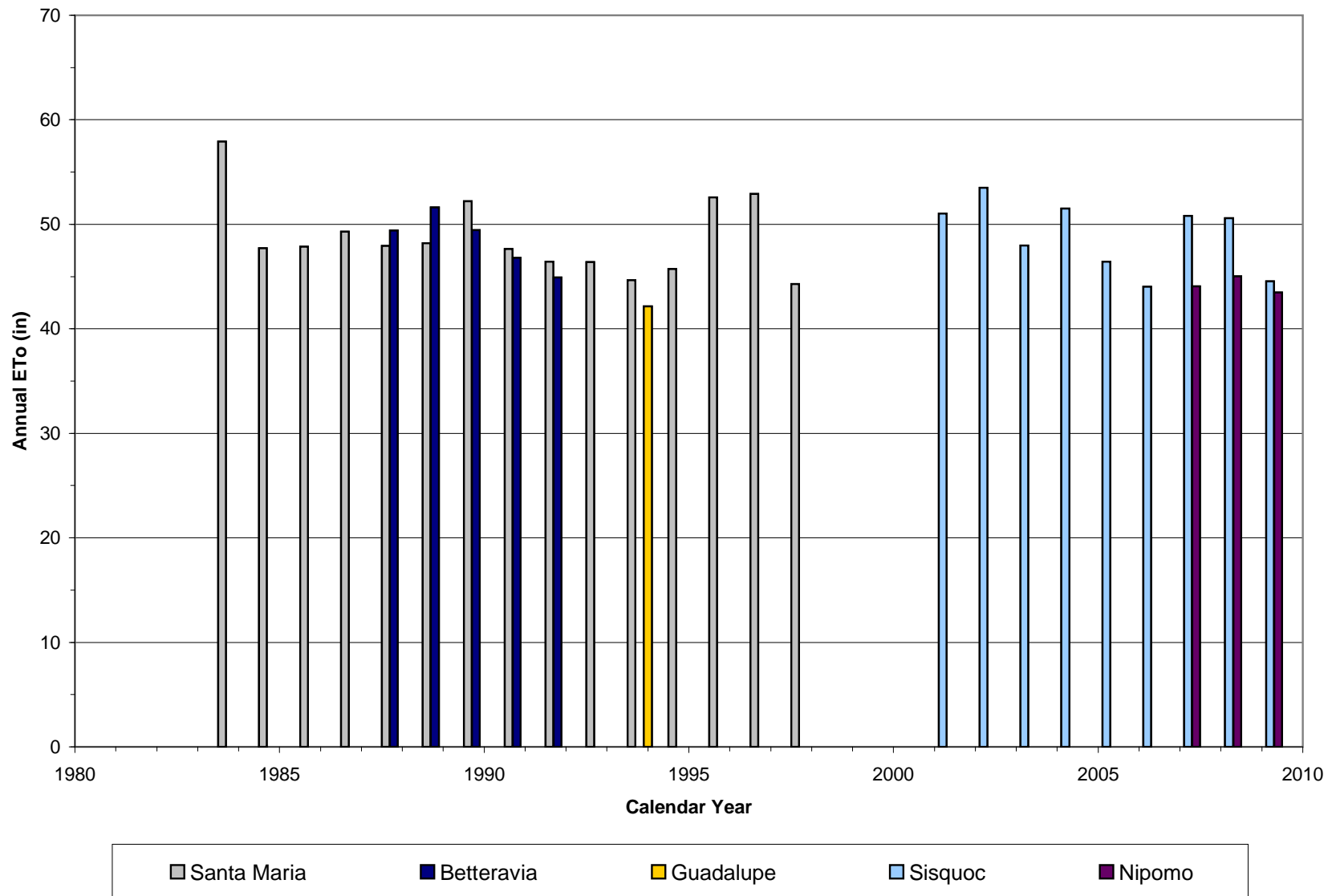
Note:  
 Discharge data are unavailable for the 'Orcutt Creek' Gauge from 1992-1994.  
 The 2009 discharge total includes Approved data for Jan-Sep and Provisional data for Oct-Dec.











**Table 2.4-1**  
**Precipitation Data, 2009, Santa Maria Airport**  
**Santa Maria Valley Management Area**  
(all values in inches)

Day	January	February	March	April	May	June	July	August	September	October	November	December	
1	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.03	0.00	0.02	0.00	0.03	0.00	0.00	T	0.00	0.00	0.00	0.00	
3	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.50	0.00	0.00	0.02	T	0.00	0.00	0.00	0.00	0.00	0.00	
6	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	
7	0.00	0.21	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	
8	0.00	0.12	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.08	
11	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	0.10	
12	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	0.38	
13	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.06	
14	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.50	0.00	0.00	
15	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
17	0.00	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	
20	0.00	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	
21	T	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
22	0.09	0.19	0.31	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	
23	0.04	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
24	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
29	0.00		0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	0.00	0.00	
30	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	
31	0.00		0.00		T		0.00	0.00		0.00		0.00	
Total	0.17	4.68	0.69	0.10	0.08	0.00	0.00	0.01	0.01	1.57	0.00	2.53	
T = Trace amount											Total Precipitation (in)		9.84

**Table 2.4-2**  
**Reference Evapotranspiration and Precipitation Data, 2009**  
**Nipomo and Sisquoc CIMIS Stations**

Nipomo CIMIS Station																								
Day	January		February		March		April		May		June		July		August		September		October		November		December	
	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)
1	0.08	0.00	0.12	0.00	0.12	0.00	0.14	0.02	0.09	0.07	0.11	0.00	0.16	0.00	0.13	0.00	0.17	0.00	0.20	0.00	0.13	0.02	0.04	0.00
2	0.06	0.05	0.12	0.00	0.04	0.04	0.11	0.01	0.11	0.11	0.12	0.00	0.18	0.00	0.15	0.00	0.18	0.00	0.31	0.00	0.12	0.00	0.04	0.01
3	0.08	0.00	0.12	0.00	0.13	0.14	0.15	0.01	0.15	0.01	0.14	0.00	0.15	0.00	0.19	0.00	0.18	0.00	0.13	0.00	0.11	0.01	0.06	0.00
4	0.07	0.00	0.10	0.00	0.08	0.09	0.16	0.00	0.15	0.02	0.20	0.00	0.18	0.00	0.18	0.00	0.16	0.00	0.10	0.00	0.03	0.01	0.07	0.00
5	0.03	0.00	0.05	0.46	0.11	0.00	0.19	0.00	0.17	0.02	0.11	0.00	0.16	0.00	0.17	0.00	0.15	0.00	0.10	0.00	0.08	0.00	0.02	0.00
6	0.07	0.00	0.04	0.78	0.11	0.00	0.15	0.00	0.20	0.03	0.19	0.00	0.20	0.00	0.19	0.00	0.15	0.00	0.11	0.00	0.09	0.02	0.05	0.00
7	0.07	0.00	0.05	0.17	0.12	0.00	0.08	0.08	0.21	0.02	0.20	0.00	0.20	0.00	0.19	0.00	0.16	0.00	0.11	0.00	0.10	0.01	0.01	0.72
8	0.06	0.01	0.03	0.13	0.11	0.00	0.13	0.03	0.22	0.02	0.18	0.00	0.19	0.00	0.17	0.00	0.15	0.00	0.16	0.00	0.12	0.01	0.07	0.00
9	0.10	0.00	0.07	0.38	0.12	0.01	0.11	0.01	0.19	0.03	0.18	0.00	0.18	0.00	0.13	0.00	0.13	0.00	0.16	0.00	0.08	0.01	0.07	0.00
10	0.09	0.00	0.09	0.00	0.13	0.00	0.14	0.02	0.17	0.03	0.12	0.00	0.16	0.00	0.12	0.00	0.15	0.00	0.10	0.00	0.08	0.00	0.02	0.99
11	0.12	0.00	0.06	0.10	0.07	0.00	0.16	0.01	0.18	0.02	0.16	0.00	0.17	0.00	0.12	0.00	0.10	0.00	0.07	0.00	0.01	0.00	0.03	0.25
12	0.11	0.00	0.08	0.02	0.11	0.01	0.18	0.02	0.19	0.02	0.12	0.00	0.18	0.00	0.13	0.00	0.05	0.00	0.06	0.00	0.02	0.03	0.01	0.36
13	0.12	0.00	0.05	0.65	0.12	0.00	0.13	0.01	0.22	0.00	0.20	0.00	0.19	0.00	0.18	0.00	0.15	0.00	0.01	0.00	0.08	0.00	0.06	0.07
14	0.10	0.00	0.08	0.03	0.09	0.01	0.16	0.00	0.19	0.00	0.20	0.00	0.19	0.00	0.18	0.00	0.12	0.00	0.05	0.00	0.08	0.02	0.06	0.00
15	0.11	0.00	0.11	0.00	0.12	0.01	0.16	0.02	0.19	0.00	0.13	0.00	0.18	0.00	0.15	0.00	0.15	0.00	0.11	0.00	0.09	0.00	0.05	0.00
16	0.11	0.00	0.04	0.57	0.12	0.00	0.15	0.02	0.18	0.00	0.18	0.00	0.17	0.00	0.10	0.00	0.14	0.00	0.18	0.00	0.09	0.00	0.07	0.00
17	0.11	0.01	0.09	0.04	0.18	0.01	0.18	0.01	0.14	0.00	0.16	0.00	0.15	0.00	0.12	0.00	0.17	0.00	0.12	0.00	0.08	0.00	0.09	0.04
18	0.11	0.00	0.10	0.00	0.17	0.00	0.16	0.02	0.09	0.00	0.14	0.00	0.13	0.00	0.11	0.00	0.14	0.00	0.05	0.00	0.10	0.00	0.07	0.03
19	0.12	0.00	0.11	0.00	0.16	0.01	0.22	0.00	0.09	0.00	0.16	0.00	0.19	0.00	0.09	0.00	0.10	0.00	0.09	0.05	0.09	0.00	0.07	0.00
20	0.11	0.00	0.09	0.00	0.05	0.01	0.26	0.00	0.15	0.00	0.10	0.00	0.16	0.00	0.11	0.00	0.02	0.00	0.11	0.02	0.07	0.02	0.04	0.00
21	0.06	0.00	0.05	0.03	0.07	0.06	0.20	0.03	0.14	0.00	0.19	0.00	0.16	0.00	0.13	0.00	0.10	0.00	0.11	0.02	0.08	0.00	0.03	0.08
22	0.04	0.11	0.03	0.20	0.13	0.15	0.10	0.01	0.14	0.00	0.15	0.00	0.16	0.00	0.02	0.00	0.11	0.00	0.11	0.01	0.08	0.01	0.08	0.07
23	0.02	0.06	0.09	0.21	0.16	0.00	0.07	0.02	0.11	0.00	0.14	0.00	0.15	0.00	0.14	0.00	0.12	0.00	0.13	0.01	0.11	0.00	0.07	0.02
24	0.04	0.00	0.07	0.00	0.15	0.02	0.14	0.01	0.14	0.00	0.11	0.00	0.14	0.00	0.13	0.00	0.12	0.00	0.11	0.01	0.09	0.00	0.07	0.00
25	0.05	0.00	0.10	0.00	0.14	0.01	0.17	0.01	0.11	0.00	0.12	0.00	0.15	0.00	0.15	0.00	0.11	0.00	0.14	0.00	0.09	0.00	0.07	0.00
26	0.08	0.00	0.10	0.00	0.13	0.01	0.17	0.02	0.14	0.00	0.16	0.00	0.17	0.00	0.16	0.00	0.12	0.00	0.11	0.01	0.09	0.01	0.04	0.00
27	0.10	0.00	0.11	0.00	0.14	0.00	0.14	0.02	0.10	0.00	0.16	0.00	0.16	0.00	0.19	0.00	0.11	0.00	0.11	0.02	0.03	0.00	0.04	0.05
28	0.11	0.00	0.09	0.00	0.15	0.03	0.18	0.02	0.05	0.00	0.16	0.00	0.12	0.00	0.19	0.00	0.04	0.00	0.14	0.00	0.07	0.01	0.04	0.00
29	0.15	0.00			0.12	0.01	0.18	0.02	0.07	0.00	0.15	0.00	0.11	0.00	0.23	0.00	0.18	0.00	0.11	0.00	0.09	0.00	0.07	0.00
30	0.11	0.00			0.17	0.00	0.17	0.03	0.06	0.00	0.16	0.00	0.14	0.00	0.15	0.00	0.15	0.00	0.11	0.00	0.08	0.00	0.03	0.07
31	0.09	0.01			0.16	0.01			0.06	0.00			0.11	0.00	0.14	0.00	0.10	0.02					0.07	0.00
Total	2.68	0.25	2.24	3.77	3.78	0.64	4.64	0.48	4.40	0.40	4.60	0.00	5.04	0.00	4.54	0.00	3.88	0.00	3.61	0.17	2.46	0.19	1.61	2.76
Total Evapotranspiration (in)																						43.48		
Total Precipitation (in)																						8.66		
Sisquoc CIMIS Station																								
Day	January		February		March		April		May		June		July		August		September		October		November		December	
	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)	ETo (in)	Precip (in)
1	0.00	0.00	0.10	0.00	0.11	0.00	0.14	0.00	0.09	0.75	0.12	0.00	0.18	0.00	0.18	0.00	0.19	0.00	0.19	0.00	0.10	0.00	0.05	0.00
2	0.00	0.00	0.13	0.00	0.03	0.00	0.13	0.00	0.13	3.05	0.16	0.00	0.20	0.00	0.17	0.00	0.18	0.00	0.17	0.00	0.12	1.56	0.02	0.00
3	0.00	0.00	0.13	0.00	0.10	0.19	0.16	0.00	0.17	0.00	0.13	0.00	0.19	0.00	0.16	0.00	0.18	0.00	0.10	0.00	0.12	0.57	0.04	0.00
4	0.00	0.00	0.13	0.00	0.04	0.34	0.16	0.00	0.14	1.99	0.17	0.00	0.19	0.00	0.18	0.00	0.16	0.00	0.11	0.00	0.04	0.83	0.06	0.00
5	0.00	0.00	0.06	0.00	0.10	0.00	0.20	0.00	0.17	0.71	0.10	0.00	0.17	0.00	0.18	0.00	0.15	0.00	0.11	0.00	0.06	0.63	0.02	0.00
6	0.07	0.00	0.02	0.00	0.10	0.00	0.18	0.00	0.20	0.00	0.18	0.00	0.20	0.00	0.18	0.00	0.15	0.00	0.12	0.00	0.08	0.01	0.03	0.00
7	0.06	0.00	0.03	0.00	0.11	0.00	0.08	0.17	0.22	0.00	0.19	0.00	0.20	0.00	0.18	0.00	0.15	0.00	0.13	0.00	0.09	0.00	0.01	0.77
8	0.06	0.00	0.01	0.00	0.11	0.00	0.10	0.02	0.25	0.00	0.18	0.00	0.19	0.00	0.18	0.00	0.16	0.00	0.10	0.00	0.10	0.00	0.05	0.00
9	0.07	0.00	0.03	0.00	0.11	0.00	0.14	0.00	0.19	0.00	0.16	0.00	0.19	0.00	0.14	0.00	0.14	0.00	0.09	0.00	0.08	0.00	0.04	0.00
10	0.08	0.00	0.08	0.00	0.12	0.00	0.13	0.00	0.19	0.00	0.10	0.00	0.18	0.00	0.16	0.00	0.16	0.00	0.09	0.00	0.08	0.00	0.02	0.89
11	0.12	0.00	0.04	0.09	0.05	0.00	0.15	0.00	0.18	0.00	0.15	0.00	0.20	0.00	0.15	0.00	0.12	0.00	0.07	0.00	0.01	0.00	0.01	0.13
12	0.11	0.00	0.08	0.04	0.11	0.00	0.16	0.00	0.18	0.00	0.08	0.00	0.21	0.00	0.09	0.00	0.13	0.00	0.07	0.00	0.03	0.00	0.01	0.65
13	0.13	0.00	0.04	0.44	0.12	0.00	0.13	0.00	0.21	0.00	0.19	0.00	0.21	0.00	0.18	0.00	0.10	0.00	0.02	0.00	0.08	0.00	0.01	0.37
14	0.13	0.00	0.06	0.00	0.06	0.00	0.15	0.00	0.20	0.00	0.19	0.00	0.21	0.0.										

### **3. Water Requirements and Water Supplies**

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Current water requirements and water supplies in the SMVMA, including discussion of agricultural land use and crop water requirements, which were the basis for estimation of agricultural water requirements and groundwater supply in 2009, are described in the following sections of this Chapter. Municipal water requirements and the components of water supply to meet those requirements, including groundwater and imported water from the State Water Project (SWP), are also described in the following sections.

#### **3.1 Agricultural Water Requirements and Supplies**

All agricultural water requirements in the SMVMA are supplied by local groundwater pumping, essentially all of which is neither directly metered nor otherwise indirectly measured. Consequently, agricultural water requirements, which represent by far the largest part of overall water requirements in the SMVMA, need to be indirectly estimated. Historically, and for this annual report, agricultural water requirements are estimated by quantifying land use (crop types and acreages), computing applied water requirements for each crop type, and summing total water requirements for the aggregate of various crops throughout the SMVMA. Reflected in this annual report are previously reported estimates of historical agricultural land use and water requirements through 1995 (LSCE, 2000), and current estimates of land use and water requirements for years 1996 through 2009 made as part of the overall preparation of this 2009 annual report.

##### **3.1.1 Land Use**

An assessment was made of crop acreages in 2009 from the review of Pesticide Use Report (PUR) databases, including mapped agricultural parcels permitted for pesticide application, maintained by the Santa Barbara and San Luis Obispo County Agricultural Commissioner's Offices. The mapped parcels were identified by the respective Counties under the following crop types: 1) Rotational Vegetable, 2) Strawberry, 3) Wine Grape, 4) Pasture, 5) Grain, 6) Nursery, and 7) Orchard (Citrus and Deciduous). Review of the PUR records indicated that "Rotational Vegetable" primarily consisted of lettuce, celery, broccoli, cauliflower, and spinach crops. Verification of agricultural cropland distribution in the SMVMA was conducted through review of monthly satellite images, available high-resolution aerial photographs, and a field survey conducted by LSCE in July 2009. The distribution of irrigated acreage for 2009, both by crop type identified by the Counties as well as by crop category utilized by the California DWR in its periodic land use studies, is listed in Table 3.1-1a. In addition, the crop parcel locations in 2009 are shown in a map of agricultural land use throughout the SMVMA (Figure 3.1-1a) and monthly satellite images from 2009 are included in Appendix B.

Land use was also determined for the recent period since the last land use study conducted by DWR in 1995. Utilizing the same methodology as for 2009, assessments were made of crop acreages for years 1998, 2001, and 2004 through 2008, with the latter a reassessment of the 2008 land use estimate provided in the 2008 annual report of conditions in the SMVMA (LSCE, 2009). It should be noted that County crop acreage data were only available for years 2005

forward (San Luis Obispo) and 2006 forward (Santa Barbara), so land use assessments for earlier years were based solely on available satellite imagery and high-resolution aerial photography. Crop acreages for the remaining intervening years (1996, 1997, 1999, 2000, 2002, and 2003) were estimated by linear interpolation between assessment years. The distribution of historical irrigated acreage, including DWR land use study years and LSCE assessment years through 2009, is listed in Table 3.1-1b. Crop parcel location maps for the LSCE assessment years 1998, 2001, and 2004 through 2008 are provided in Appendix B, along with a summary of images, photographs, and GIS data utilized for the assessments listed by type, resolution, date, and source. It should be noted that the 2008 land use reported herein slightly differs from that of last year's 2008 annual report, and is due to refinement of the methodology used to estimate land use, specifically due to greater detail provided by high resolution photographs (made available in 2009) of the SMVMA and surrounding area, and to greater understanding of long-term trends in cropping patterns derived from assessing land use throughout the last decade toward preparation of this 2009 annual report.

In 2009, approximately 51,400 acres in the Santa Maria Valley were irrigated cropland, with the predominant majority (86 percent) in truck crops, specifically Rotational Vegetables (33,800 acres) and Strawberries (10,400 acres). Vineyard comprised the next largest category (4,800 acres), with Grain, Pasture, Nursery, and Orchard in descending order of acreage (580, 440, 240, and 36 acres, respectively). Fallow cropland was estimated to be just over 1,000 acres. Cropland occupies large portions of the Santa Maria Valley floor, Orcutt Upland, Oso Flaco area, and Sisquoc plain and terraces.

Total irrigated acreage of about 51,400 acres in 2009 is near the upper end of the range over the last 15 years, and within the reported historical range between roughly 34,000 acres in 1945 and 53,000 acres in 1995, as shown in Table 3.1-1b (USGS, Worts, G.F., 1951; California DWR, 1959, 1968, 1977, 1985, and 1995; LSCE, 2000 and 2009). The 2009 irrigated acreage is consistent with those of the last decade, during which total acreages gradually increased from 48,200 acres in 1998. The 2009 cropland locations continue the historical trend of agricultural expansion onto portions of the Orcutt Upland and Sisquoc Valley as urban land use expands into former cropland near the central portions of the Santa Maria Valley and Orcutt Upland. Further, the 2009 crop type distribution continues the historical trend of increased truck crop acreage and decline in pasture (including alfalfa), field, and orchard acreages, as illustrated by the bar chart of historical crop type distribution from DWR land use study years and for 2009 (Figure 3.1-1b). In order to provide consistency with the historical land use data, the 2009 crop acreages reported here are "land" acreages; i.e., the land area used for growing crops regardless of whether it is used for single or multiple cropping throughout any given year. Multiple cropping of land, and associated annual water requirements, is accommodated in the calculation of applied crop water requirements below.

### **3.1.2 Applied Crop Water Requirements**

Applied crop water requirements were developed for the crop categories described above, and the approach used in their development depended on information available for each individual category. In the case of Rotational Vegetables (primarily lettuce, celery, broccoli, cauliflower, and spinach), Strawberries, and Pasture, values for their evapotranspiration of applied water

(ETaw) were developed using a CIMIS-based approach where reference evapotranspiration data (ETo) were coupled with crop coefficients (Kc) to first estimate the evapotranspirative water requirements of the crops (ETc). Those requirements were then factored to consider any effective precipitation in 2009 that would have reduced the need for applied water to meet the respective evapotranspirative water requirements, which in turn provided the ETaw values for those three categories.

For the remaining crop categories, for which information was insufficient to utilize a CIMIS-based approach, reported values of ETaw were used (California DWR, 1975). Specifically, these were values measured and developed for different rainfall zones in the central California coastal valleys, and a review of the reported values indicated that they accommodated multiple cropping. The values in turn had previously been used to develop a relationship between ETaw values and the annual rainfall amounts within the Santa Maria Valley groundwater basin by crop type (LSCE, 2000). Since the rainfall total for 2009 in the SMVMA was 9.84 inches, the previously developed ETaw values corresponding to 10 inches of precipitation were used for this assessment.

For the three crop categories utilizing the CIMIS-based approach, the average of daily ETo data for 2009 from the nearest CIMIS stations (Nipomo and Sisquoc, see Table 2.4-2) were used in conjunction with Kc values from the following sources to develop ETc values. The Rotational Vegetable value was based on reported values for lettuce derived from an agricultural leaflet for estimating ETc for vegetable crops (Univ. of California Cooperative Extension, 1994); the Strawberry values were derived from a paper reporting the results of a study on drip irrigation of strawberries in the Santa Maria Valley (Hanson, B., and Bendixen, W., 2004); and the Pasture values were directly based on ETo values measured on the reference surface (grass) at the Nipomo and Sisquoc Stations. The resulting ETc values for the three crop categories are shown in Table 3.1-1c.

Effective precipitation ( $P_E$ ) during 2009 was then subtracted from the ETc values to estimate crop ETaw values. The  $P_E$  amounts that contributed to meeting the ETc of the crops, and thus reduced applied water requirements, were based on review of the precipitation data for 2009, during which rain primarily occurred in February, October, and December. In the month of February, the rainfall total of 4.68 inches exceeded the February ETc for the crops and, thus, the  $P_E$  was considered to fully meet crop ETc. October rainfall of 1.57 inches met a large portion of the crop ETc for the month, as did the December rainfall of 2.53 inches. The calculated ETaw values for Rotational Vegetables, Strawberries, and Pasture, as well as the developed values for the remaining crop categories (and the value for Nursery from NMMA TG), are shown in Table 3.1-1c.

Values of ETaw were then used to estimate applied crop water requirements (AW) by considering estimated irrigation system distribution uniformity (DU) values for each crop. For Strawberries grown in the Santa Maria Valley, DU values have been reported to range from 80 and 94 percent (Hanson, B., and Bendixen, W., 2004), and an intermediate DU value of 85 percent was selected for this assessment. For the remaining crops, DU values have not been specifically reported for the Santa Maria Valley; for this assessment, values of 80 percent (Rotational Vegetables, Truck, Grain, and Pasture), 85 percent (Citrus), and 95 percent

(Vineyard and Nursery) were utilized. The resulting AW values for each of the crop categories are shown in Table 3.1-1c; they range from a highest applied water rate of 4.0 af/ac for Pasture, to intermediate rates of 2.2 af/ac for Rotational Vegetables and 1.5 af/ac for strawberries, to a low of 0.4 af/ac for Grain.

The AW values calculated for crops grown in the SMVMA are similar to those for crops grown in the NMMA (NMMA Technical Group, April 2010). Between the two adjacent management areas, crops in common are Rotational Vegetables, Strawberries, Pasture, Citrus, and Deciduous. Estimated applied crop water requirements in 2009 are 2.2, 1.5, 4.0, 2.9, and 2.8 af/ac, respectively, in the SMVMA, compared to 2.5, 1.3, 3.5, 2.4, and 3.1 af/ac, respectively, reported in the NMMA.

Utilizing the same methodology as for 2009, applied crop water requirements were developed for the recent period, years 1996 through 2008, with minor adjustments in developing AW values for rotational vegetables, strawberries, and pasture as follows: 1) for years 1996 through 1998 when CIMIS data were only available from a now inactive station located on the Santa Maria Valley floor, daily ETo data from that station were utilized; 2) for years 1999 and 2000 when CIMIS data were not available, reported values of ETaw were used; and 3) for years 2001 through 2006, when CIMIS data were only available from the Sisquoc station, daily ETo data from that station were adjusted based on a factor developed from the average of Sisquoc and Nipomo station data from years of overlap (2007 through 2009).

### **3.1.3 Total Agricultural Water Requirements**

The AW values for each SMVMA crop category were coupled with their respective crop acreages from 2009 to produce estimates of the individual crop and total agricultural water requirements for 2009, as shown in Table 3.1-1c. The resultant estimated total water requirement was about 98,100 af, with Rotational Vegetables comprising by far the greatest component, about 74,000 af, primarily because about 65 percent of the total acreage was dedicated to those crops. Strawberries comprised the next largest crop acreage and had an associated water requirement over 15,500 af. Vineyard had a water requirement of about 6,000 af, and all remaining crop types had water requirements below 2,000 af.

For each year in the recent period 1996 through 2008, AW values were coupled with corresponding crop acreages to produce estimates of annual agricultural water requirements during the period, as shown in Appendix B tables.

In the context of historical estimates of total agricultural water requirements, the estimated 2009 agricultural water use is in the range of applied water requirements over the last four decades, as illustrated in a graph of historical irrigated acreage and agricultural groundwater pumping (the sole source of irrigation water in the Valley and, thus, equal to total agricultural water requirements) (Figure 3.1-1c). For reference, agricultural water requirements were previously estimated to be around 80,000 afy during the 1940's and 1950's, gradually increasing to over 100,000 afy by the 1970's; since then, agricultural water requirements have fluctuated from year to year, as a function of weather variability, but water requirements have generally remained within a broad but fairly constant range (LSCE, 2000). Since the 1970's, maximum and

minimum agricultural water requirements, respectively, were about 132,000 af in 1997 and about 77,000 af in 1998, with estimated agricultural water requirements in 2009 midway in that range.

### **3.1.4 Agricultural Groundwater Pumping**

As noted above, the sole source of water for agricultural irrigation in the SMVMA is groundwater, so groundwater pumping for agricultural irrigation in 2009 is estimated to be the same as the total estimated agricultural water requirement of 98,100 af. This amount is also, of course, midway within the historical range of estimated groundwater pumping for agricultural irrigation in the Valley over the last four decades. Proportions of groundwater pumping from the shallow and deep aquifer zones of the SMVMA are not known because a comprehensive understanding of individual irrigation well depths and completion intervals is lacking.

## **3.2 Municipal Water Requirements and Supplies**

Prior to the late 1990's, all municipal water requirements in the SMVMA were met by local groundwater pumping. Since the beginning of State Water Project (SWP) availability in 1997, deliveries of SWP water have replaced some of the local groundwater pumping for municipal supply. All municipal pumping and imported (SWP) water deliveries in the SMVMA are metered; consequently, the following summaries of municipal water requirement and supplies derive from those measured data.

### **3.2.1 Municipal Groundwater Pumping**

Municipal purveyors in the SMVMA include the Cities of Santa Maria and Guadalupe and the Golden State Water Company (GSWC, formerly Southern California Water Company). The latter provides water to suburban areas in the southern portion of the SMVMA, specifically the towns of Orcutt and Sisquoc and the Lake Marie and Tanglewood developments. With the exception of small pumping in Guadalupe and Sisquoc, municipal pumping is from numerous water supply wells in individual wellfields located between the Santa Maria Airport and the town of Orcutt (see Figure 1.3-1a). The municipal water supply wells are completed in the shallow and/or deep aquifer zones with, in general, newer wells having been constructed to produce from deeper portions of the aquifer system with better water quality. Monthly and total annual groundwater pumping amounts for 2009 are tabulated by individual well, by purveyor, and for each water system in Table 3.2-1a.

In 2009, 15,960 af of groundwater were pumped for municipal water supply in the SMVMA. GSWC pumping was the largest, nearly 8,460 af, of which the great majority (8,100 af) was for the GSWC Orcutt system and less than 300 af was for all three of the other GSWC systems combined. The City of Santa Maria pumped slightly more than 6,600 af and the City of Guadalupe pumped about 880 af.

For the recent period 1997 through 2007, annual groundwater pumping data made available by the municipal purveyors were compiled to complete the historical groundwater pumping record. Compared to historical municipal pumping, pumping for municipal supply in 2009 was substantially less than a decade ago, immediately prior to the initial deliveries of supplemental

imported SWP water in 1997, as shown in a graph of historical municipal groundwater pumpage for the SMVMA (Figure 3.2-1a). Most notably, the City of Santa Maria has substantially reduced pumping since the importation of SWP water began, from 12,800 af in 1996 to 8,000 af in 1997, to about 6,600 af in each of the last two years. Due to high availability of SWP water through the intervening period (1998 through 2007), however, groundwater pumping by Santa Maria was significantly lower, an average of about 1,000 afy. Equally notable is that total municipal pumping has been reduced to about two-thirds the 1996 amount, from over 23,500 af in 1996 to just under 16,000 af in 2009. Over the entire period since SWP was has been available, total municipal pumping has ranged between 8,900 afy and 16,350 afy, and has averaged about 11,900 afy, which would represent an approximate 50 percent decrease in municipal pumping from immediately prior to SWP water availability.

### **3.2.2 Imported Water**

The three municipal purveyors in the SMVMA have entitlements to delivery of imported water from the State Water Project (SWP) through the Central Coast Water Authority (CCWA). As tabulated by CCWA, their respective entitlements are 16,200 af for the City of Santa Maria, 550 af for the City of Guadalupe, and 500 af for Southern California Water Company (now Golden State Water Company). In addition to those entitlements, CCWA retained a “drought buffer” to partially firm up the overall entitlement of SWP participants in Santa Barbara County. Nominally equal to ten percent of the base entitlement of SWP project participants in Santa Barbara County, the drought buffer is intended for potential use by SWP project participants, including all three municipal purveyors in the SMVMA, during years when the availability of SWP water exceeds project participants’ water demand. It is intended that the drought buffer be used via some form of groundwater banking to firm up the overall reliability of supplemental SWP deliveries. As a result of the drought buffer, the municipal purveyors in the SMVMA express their “entitlements” as quantities that include a combination of their base entitlements plus the ten percent drought buffer; one such location is in Exhibit F to the Stipulation where entitlements are listed as follows: Santa Maria, 17,800 af; SCWC (GSWC), 550 af; and Guadalupe, 610 af. Such as the Stipulation also specifies certain minimum importation of SWP water, as a function of its availability in any given year and also as a function of individual purveyor entitlement, the following assessment of imported water use in 2009 is related to those total entitlements.

In 2009, total deliveries of SWP water to the SMVMA were 7,861 af. The majority of those deliveries, 7,641 af, were to the City of Santa Maria; a small portion of the Santa Maria deliveries, 84 af, were transferred to GSWC, which also took delivery of 182 af of its own entitlement. The City of Guadalupe took delivery of the balance of imported SWP water, about 38 af. Deliveries of SWP water to the SMVMA in 2009 are summarized in Table 3.2-1b.

For the recent period 1997 through 2007, annual SWP water delivery data made available by the municipal purveyors were compiled to complete the historical record of SWP water deliveries to the SMVMA. Deliveries commenced in 1997 with approximately 4,500 af going to the City of Santa Maria. The following year, the City’s delivery more than doubled to nearly 10,700 af and GSWC took about 80 af (the City of Guadalupe delivery records prior to 2004 are unavailable). Since then and through 2007, total annual SWP water deliveries ranged between about 10,400 and 13,800 afy. Due to decreased SWP water availability in 2008 and 2009, SWP water

deliveries in those years were about 8,000 afy, as shown in a graph of the historical deliveries of SWP water to the SMVMA (Figure 3.2-1b).

The Stipulation designates minimum amounts of SWP water to be imported and used in the SMVMA in any year as a function of individual entitlement and SWP availability. Santa Maria is to import and use not less than 10,000 afy of available SWP water, or the full amount of available SWP water when it is less than 10,000 af. Guadalupe is to import and use a minimum of 75 percent of its available SWP water; and GSWC is to import and use all its available SWP water. In 2009, overall SWP water availability was 40 percent of entitlements. For municipal purveyors in the SMVMA, that availability converts to the following individual availability of SWP water: Santa Maria, 7,120 af; GSWC, 220 af; and Guadalupe, 245 af (75 percent of which, or 185 af, as a minimum was to be imported). Actual imports of SWP water by all three municipal purveyors (including transfers from Santa Maria to GSWC), were as follows: Santa Maria, 7,560 af; GSWC, 265 af; and Guadalupe, 40 af (see Table 3.2-1b). Comparison of these figures indicates the City of Santa Maria and GSWC imported more than their respective minimum amounts and, thus, satisfied the specification in the Stipulation for importation and use of SWP water in the SMVMA for 2009. The City of Guadalupe did not fully comply with the Stipulation specification, importing roughly one quarter of the specified amount.

### **3.2.3 Total Municipal Water Requirements**

Total municipal water requirements in 2009 were about 23,800 af. While that total reflects a slight decrease since the highest historical municipal water use, 25,500 af in 2007, it continues a long-term general trend of increasing municipal water requirements that have essentially doubled since the mid-1970's, and have followed an approximately linear increase of about 5,000 af over the last 20 years. The overall history of municipal water use in the SMVMA is detailed in Table 3.2-1c and illustrated in a graph of annual municipal requirements (Figure 3.2-1c).

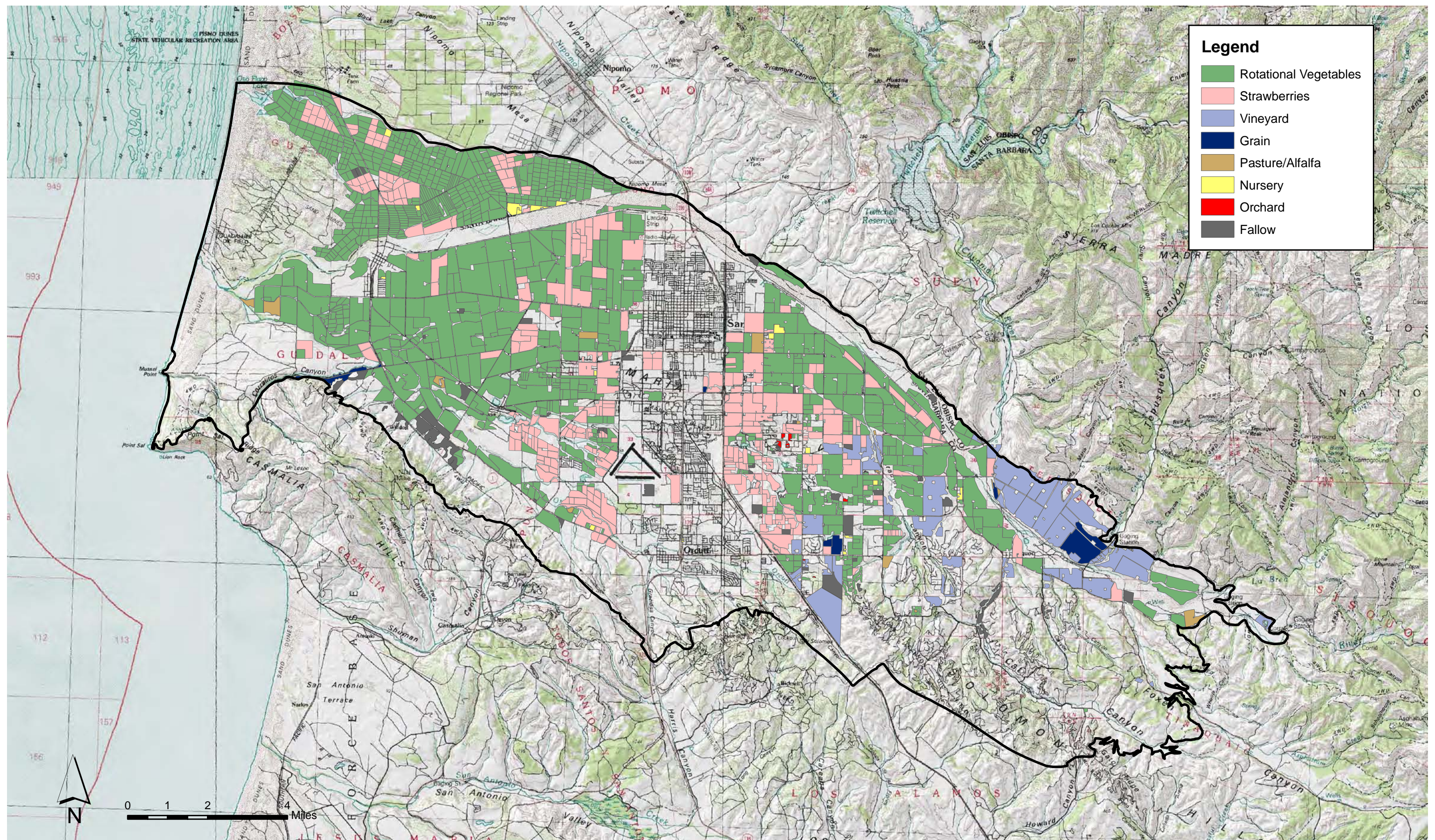
## **3.3 Total Water Requirements and Supplies**

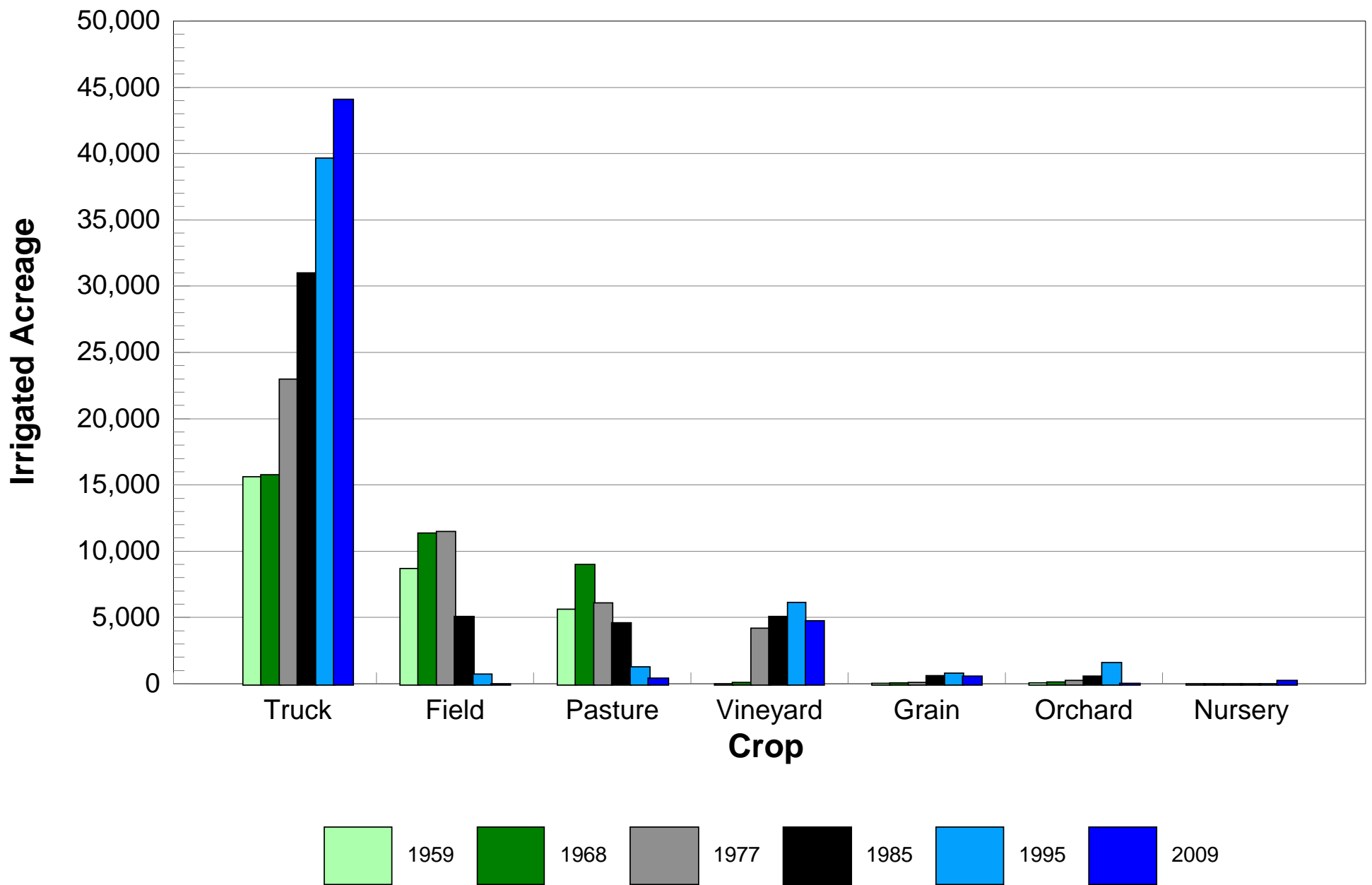
Total water requirement for 2009 in the SMVMA, the combination of agricultural and municipal water requirements, was approximately 121,900 af. That total demand was predominately met by slightly more than 114,000 af of groundwater pumping. The balance, nearly 7,900 af, was met by delivery of imported water from the State Water Project as seen in Table 3.3-1a. Groundwater met 100 percent of the agricultural water requirement (98,100 af), 67 percent of the municipal water requirements (23,800 af), and 94 percent of the total water requirements in the SMVMA (121,900 af).

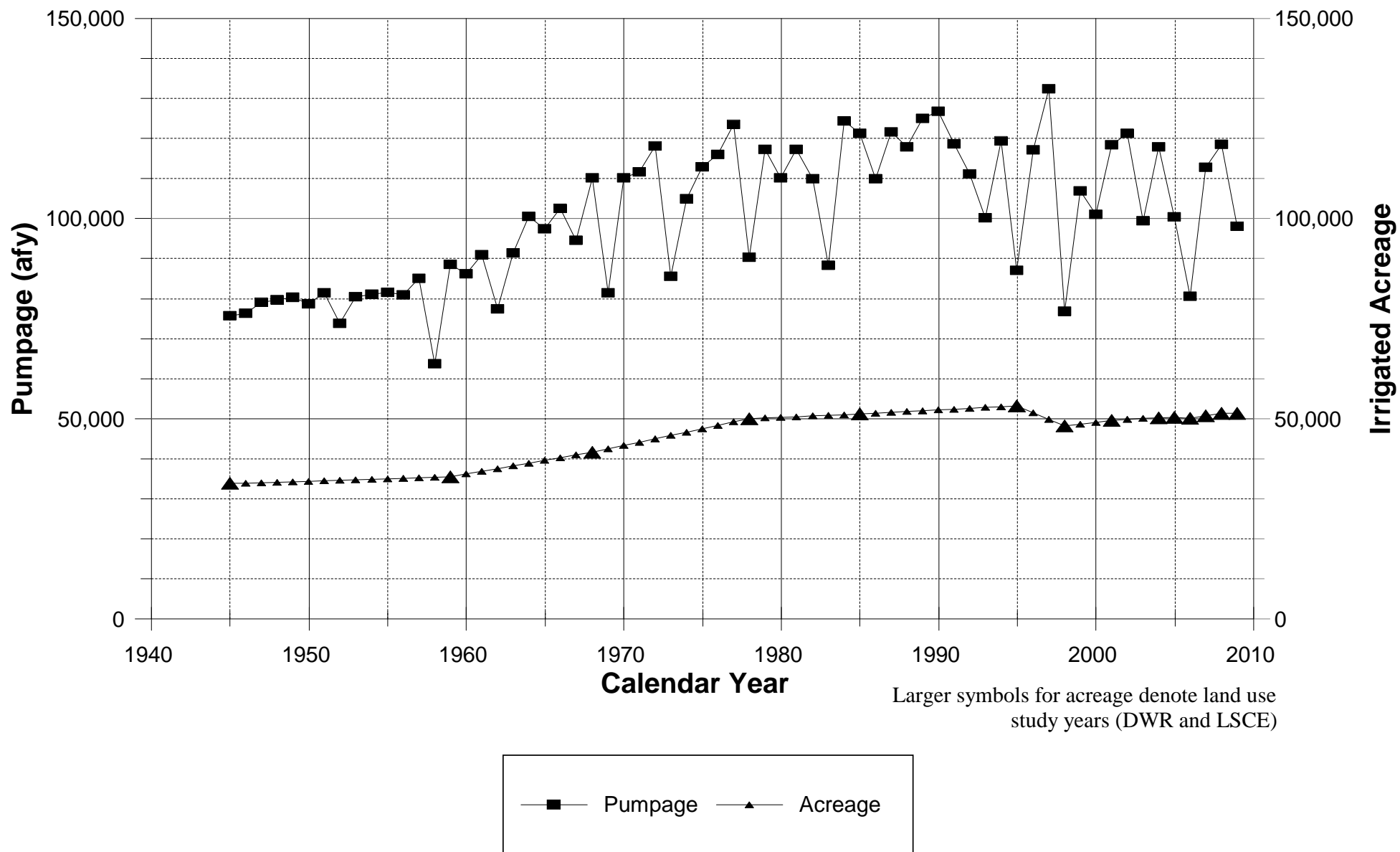
Historical total water requirements in the SMVMA have increased from about 80,000 af in 1950 to about 150,000 af by 1990, and have fluctuated in a broad but relatively constant range between about 100,000 and 150,000 afy, as shown in a graph of historical total water requirements (Figure 3.3-1). Total water requirements in 2009 remained midway within that range.

Historical water supplies in the SMVMA were solely derived from groundwater pumping until 1997, when the City of Santa Maria commenced importation of SWP water. While groundwater

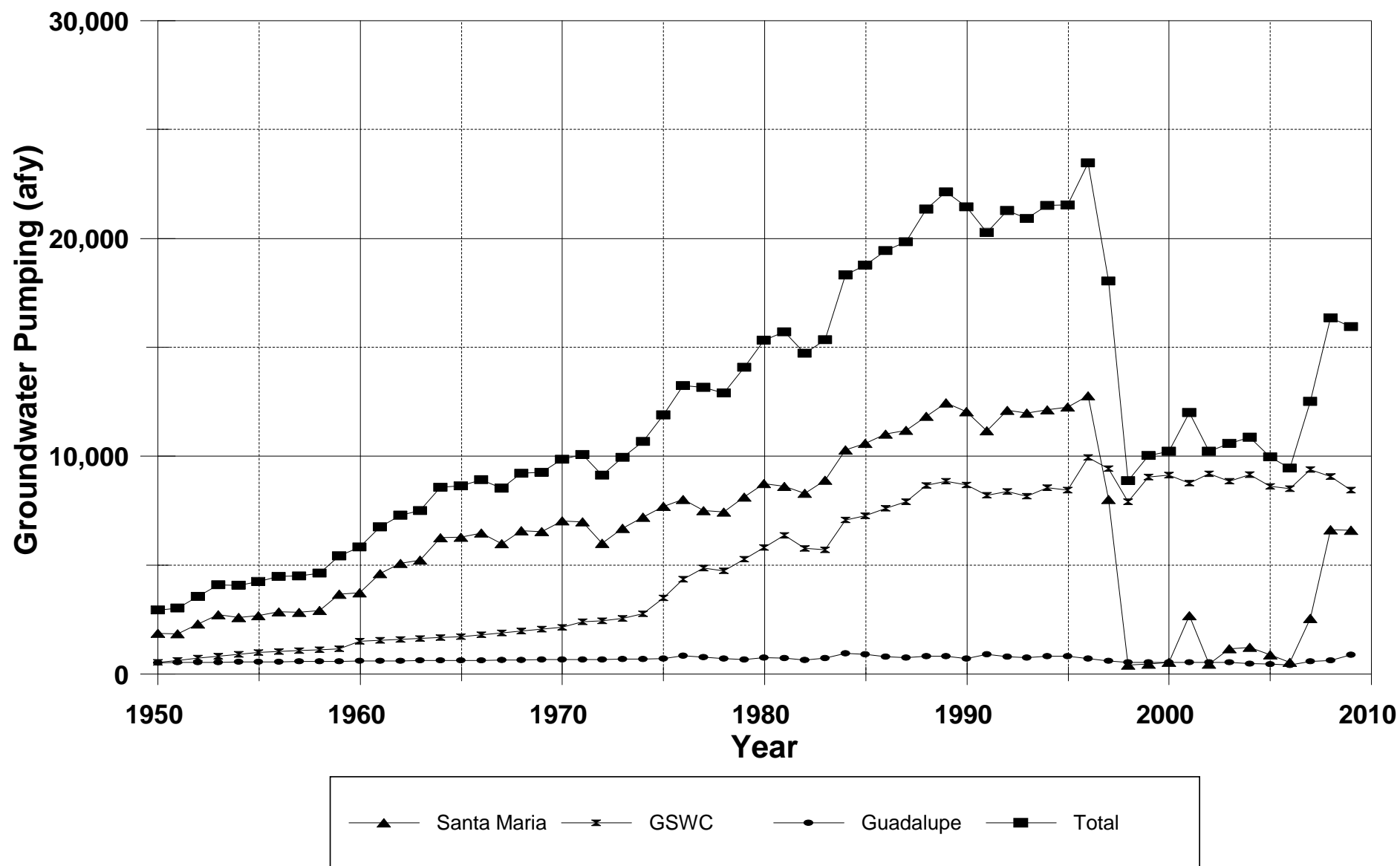
has always met 100 percent of agricultural water requirements (and through 1996 also met 100 percent of municipal water requirements), groundwater pumping has since met from 40 to 80 percent of the municipal water requirements and from 87 to 97 percent of the total water requirements in the SMVMA, as shown in Table 3.3-1b.







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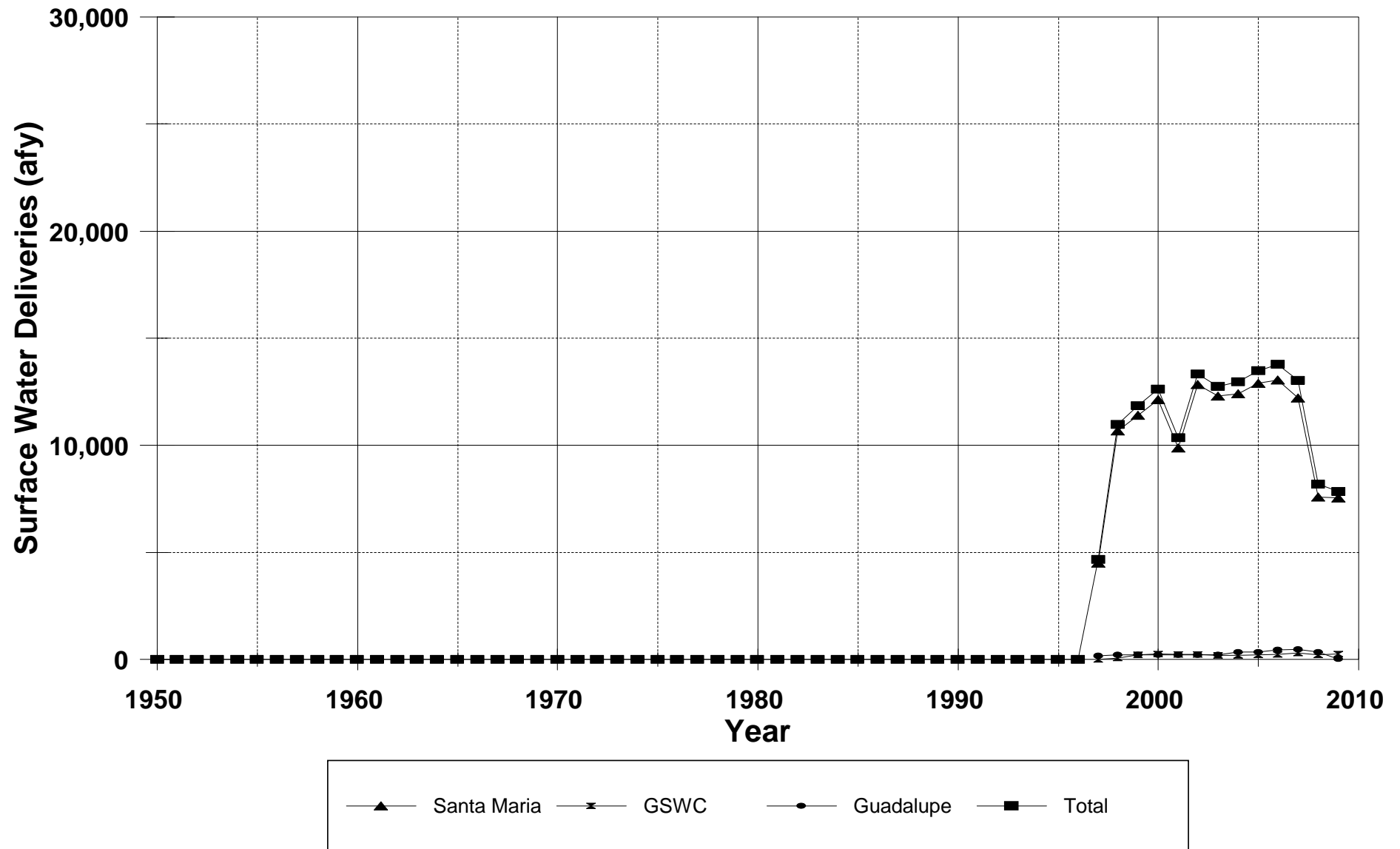


C:\Santa Maria 2009\ACAD Figures\Fig 3.2-1 Hist MI Pump\_2009.dwg

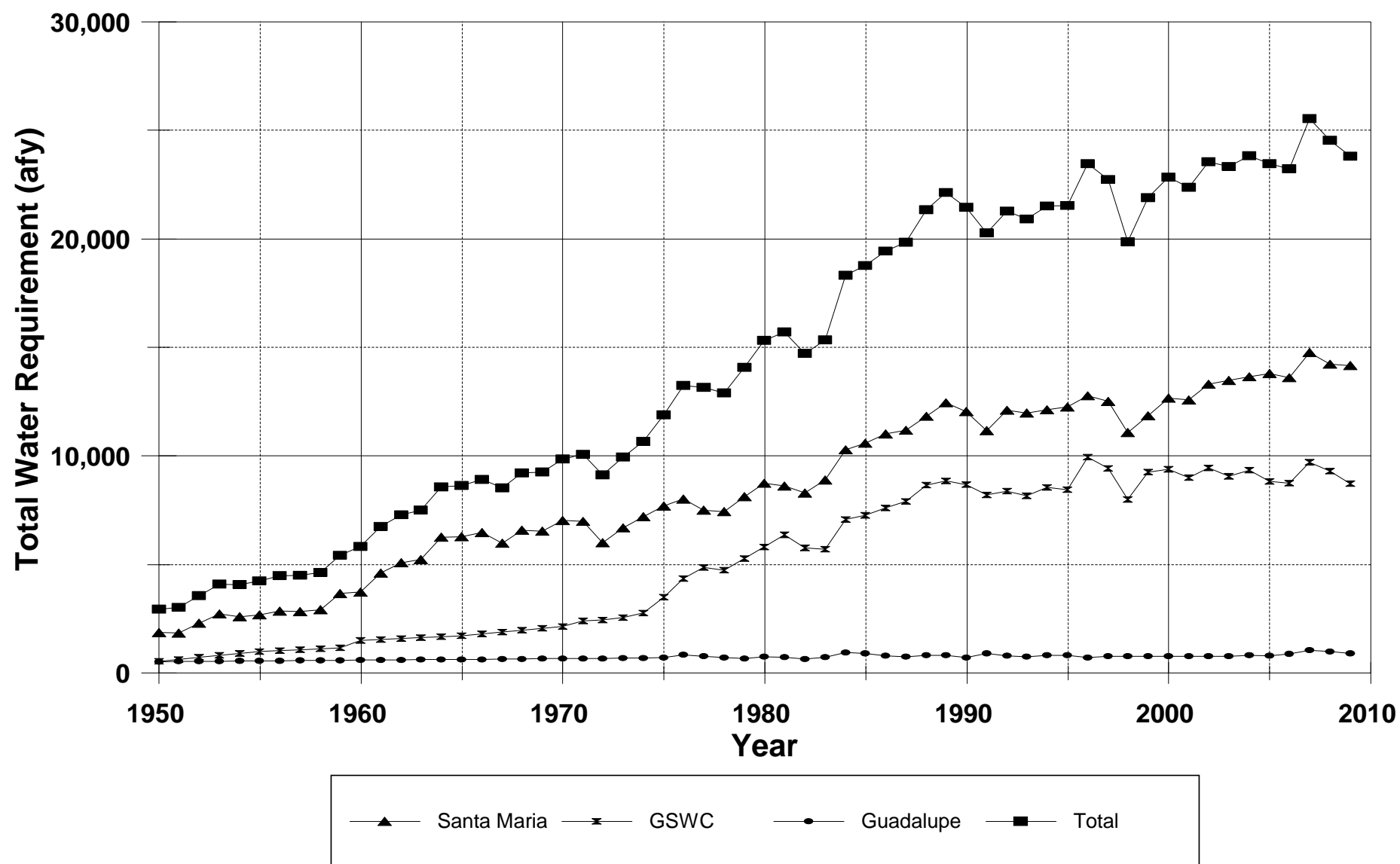


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**Figure 3.2-1a**  
**Historical Municipal Groundwater Pumpage**  
**Santa Maria Valley Management Area**



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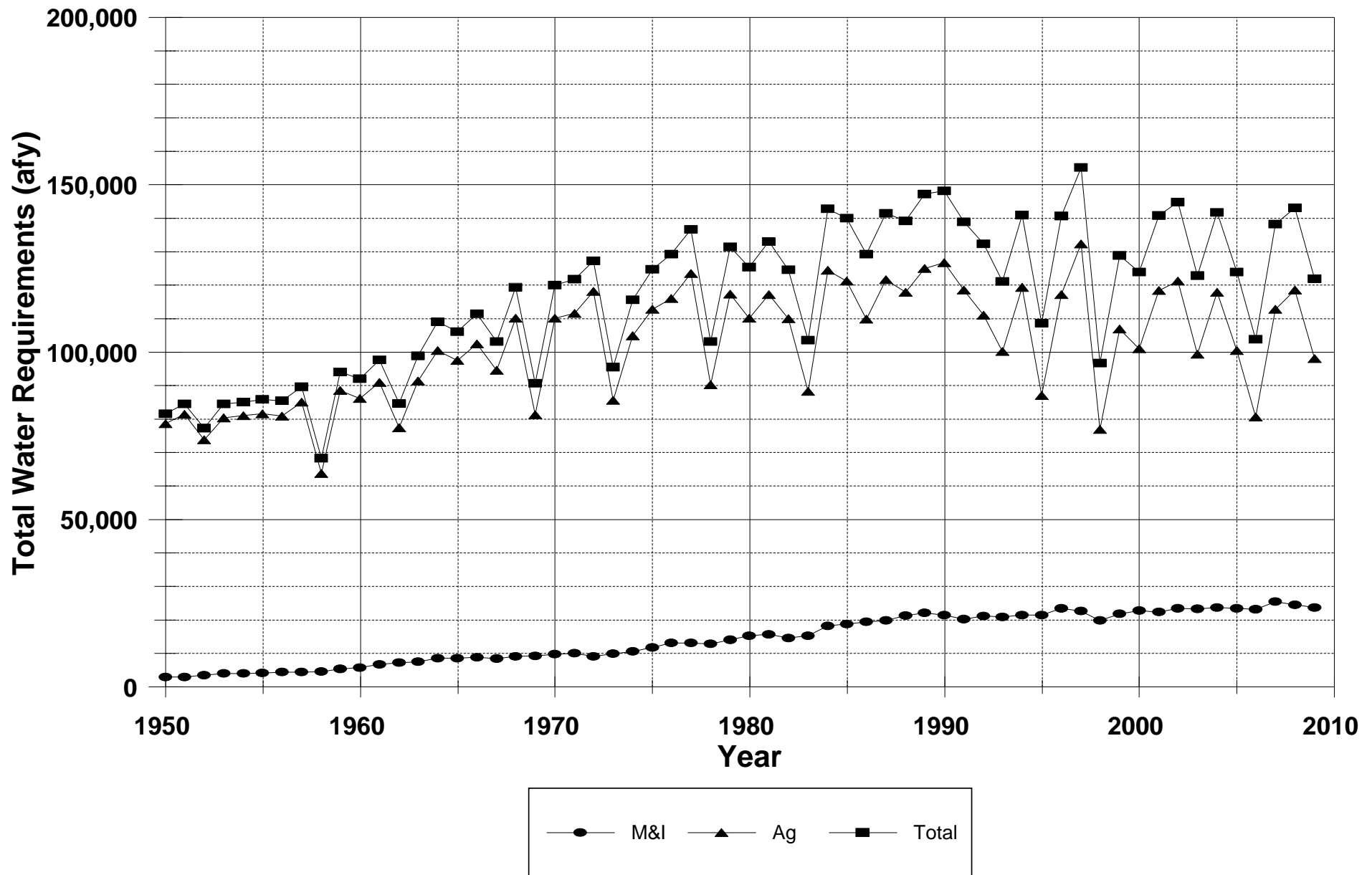


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**Figure 3.2-1c**  
**Historical Municipal Water Requirements**  
**Santa Maria Valley Management Area**



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**Figure 3.3-1**  
**Historical Total Water Requirements**  
**Santa Maria Valley Management Area**

**Table 3.1-1a**  
**Distribution of Irrigated Acreage, 2009**  
**Santa Maria Valley Management Area**

Crop Category	Acreages	
	Individual	Total
Truck Crops		
Rotational Vegetables <sup>1</sup>	33,737	44,112
Strawberries	10,375	
Vineyard		
Wine Grapes	4,765	4,765
Pasture		
Pasture, Alfalfa	441	441
Grain		
Barley, Oat, "Grain"	580	580
Nursery		
Nursery, Outdoor Container and Transplants	239	239
Orchard		
Deciduous	13	36
Citrus, Avocado	23	
Unclassified Orchard	0	
Fallow		
Fallow	1,244	1,244
Total		51,417

1) Rotational Vegetables include lettuce, broccoli, cauliflower, celery, spinach, cut flowers, peas, squash, bushberries, beans, tomatillos, and others.

**Table 3.1-1b**  
Historical Distribution of Irrigated Acreage  
Land Use Study Years (DWR and LSCE)  
Santa Maria Valley Management Area

	Year													
<b>Crop Categories</b>	1945	1959	1968	1977	1985	1995	1998	2001	2004	2005	2006	2007	2008	2009
Rotational Vegetables	-----	-----	-----	-----	-----	-----	37,264	38,329	37,645	38,097	36,189	37,015	35,132	33,737
Strawberries	-----	-----	-----	-----	-----	-----	3,516	2,731	5,968	5,958	7,553	7,388	9,139	10,375
Total Truck	20,000	15,640	15,770	23,000	31,000	39,665	40,780	41,060	43,613	44,055	43,742	44,403	44,271	44,112
Vineyard	0	0	95	4,200	5,100	6,148	5,180	5,241	4,311	4,219	4,400	4,492	4,968	4,765
Alfalfa	2,200	2,820	5,660	1,500	1,400	0	-----	-----	-----	-----	-----	-----	-----	-----
Pasture	1,000	2,830	3,330	4,600	3,200	1,295	-----	-----	-----	-----	-----	-----	-----	-----
Total Pasture	3,200	5,650	8,990	6,100	4,600	1,295	629	911	457	516	447	322	368	441
Field	5,000	8,710	11,390	11,500	5,100	734	0	0	0	0	0	0	0	0
Grain	1,200	40	80	100	640	789	546	947	760	877	837	420	382	580
Nursery	0	0	0	0	0	0	203	215	235	238	219	222	243	239
Deciduous	50	70	20	50	50	66	-----	-----	-----	15	13	13	13	13
Citrus	0	0	110	200	550	1,561	-----	-----	-----	18	18	23	23	23
Total Orchard	50	70	130	250	600	1,627	108	21	24	33	31	36	36	36
Fallow	4,400	5,430	5,220	4,900	4,200	2,973	790	1,211	932	507	408	900	1,136	1,244
<b>Total Acreage</b>	33,850	35,540	41,675	50,050	51,240	53,231	48,236	49,606	50,332	50,445	50,084	50,795	51,404	51,417

**Table 3.1-1c**  
Applied Crop Water Requirements and Total Agricultural Water Requirements, 2009  
Santa Maria Valley Management Area

	Evapotranspiration of Crop ETc (in)	Effective Precipitation P <sub>E</sub> (in)	Evapotranspiration of Applied Water ETaw (in)	Evapotranspiration of Applied Water ETaw (af/ac)	Distribution Uniformity DU (%)	Applied Water AW (af/ac)	Crop Acreage	Estimated Water Requirements (af)
<b>Crop Category</b>								
Rotational Vegetables <sup>1</sup>	23.24	2.18	21.06	1.76	80	2.19	33,737	74,011
Strawberries <sup>1</sup>	16.64	1.43	15.21	1.27	85	1.49	10,375	15,471
Vineyard <sup>2</sup>	---	---	14.4	1.2	95	1.3	4,765	6,019
Pasture <sup>1</sup>	44.16	5.79	38.37	3.20	80	4.00	441	1,763
Grain <sup>2</sup>	---	---	4.0	0.3	80	0.4	580	239
Nursery <sup>3</sup>	---	---	---	---	---	2.0	239	478
Deciduous <sup>2</sup>	---	---	28.8	2.4	85	2.8	13	37
Avocado <sup>2</sup>	---	---	30.0	2.5	85	2.9	23	68
Fallow <sup>4</sup>	---	---	---	---	---	---	1,244	---
<b>Total</b>							<b>51,417</b>	<b>98,085</b>

1) CIMIS-based applied crop water duties

2) Reported ETaw-based applied crop water duties

3) NMMA applied crop water duty, 2009

4) No applied water

**Table 3.2-1a**  
**Municipal Groundwater Pumpage in 2009**  
**Santa Maria Valley Management Area**  
**(in acre-feet)**

City of Santa Maria

Well	January	February	March	April	May	June	July	August	September	October	November	December	Total
9S	4.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	7.7	0.0	0.0	12
10S	31.1	23.7	12.6	58.7	69.9	14.1	149.8	43.1	2.7	1.0	139.2	16.6	562
11S	238.2	204.2	263.2	256.9	288.5	271.2	282.1	288.9	271.7	275.2	267.3	221.1	3,128
12S	1.0	8.3	18.4	4.0	0.0	0.1	38.9	58.0	89.3	80.3	266.0	178.8	743
13S	40.0	0.5	114.1	119.2	196.5	215.7	134.4	215.4	71.4	60.9	213.9	75.0	1,457
14S	215.1	116.1	57.7	159.8	87.3	44.7	27.3	1.1	0.9	1.0	0.5	0.0	711
<b>Purveyor Total</b>	<b>529.6</b>	<b>352.8</b>	<b>465.9</b>	<b>598.7</b>	<b>642.2</b>	<b>545.7</b>	<b>632.6</b>	<b>606.5</b>	<b>436.4</b>	<b>426.1</b>	<b>886.9</b>	<b>491.4</b>	<b>6,615</b>

	Golden State Water Company
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	Orcutt System
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Well	January	February	March	April	May	June	July	August	September	October	November	December	Total
Crescent #1	88.5	69.2	85.6	87.2	77.7	83.4	72.5	75.3	76.3	85.9	83.4	22.8	908
Kenneth #1	106.6	69.5	24.1	0.0	0.0	0.0	0.0	0.0	32.6	118.7	137.9	48.7	538
Mira Flores #1	30.4	24.5	30.0	37.7	40.2	38.0	40.0	41.7	37.0	24.0	21.8	28.7	394
Mira Flores #2	22.9	8.3	9.8	75.1	68.0	80.0	80.1	81.6	95.5	84.2	55.9	70.3	732
Mira Flores #4	1.6	0.0	10.2	87.5	58.3	84.2	78.5	36.6	0.0	0.8	77.4	78.0	513
Mira Flores #5	8.0	0.0	44.1	56.1	78.4	61.5	51.0	102.4	94.5	34.7	24.2	2.8	558
Mira Flores #6	18.6	7.5	84.8	108.1	104.2	74.4	100.5	83.8	40.7	0.0	0.5	0.0	623
Mira Flores #7	86.7	78.9	108.3	91.1	99.1	95.9	92.6	89.8	95.9	70.7	48.2	51.9	1,009
Oak	0.5	0.4	0.3	8.4	70.0	35.5	126.7	93.8	88.2	25.9	30.1	3.9	484
Orcutt	9.2	3.2	9.3	30.1	21.1	35.8	29.6	52.6	46.5	47.6	43.2	25.7	354
Woodmere #1	36.9	9.8	17.0	51.2	124.7	145.7	149.3	147.2	137.6	94.3	44.1	5.5	963
Woodmere #2	107.3	77.3	85.6	73.0	87.4	86.4	89.5	87.6	81.3	77.0	83.0	84.6	1,020
System Total	517.0	348.6	509.0	705.5	829.3	820.7	910.3	892.4	826.3	663.7	649.9	422.9	8,096

Lake Marie System		
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Well	January	February	March	April	May	June	July	August	September	October	November	December	Total
Lake Marie #3	10.4	8.6	14.1	17.4	19.7	17.9	18.1	5.0	8.1	10.1	13.3	5.7	148
Vineyard #4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Vineyard #5	6.1	1.0	1.9	7.8	12.8	13.7	18.3	30.3	25.0	11.8	9.1	6.7	145
System Total	16.6	9.6	16.0	25.2	32.4	31.6	36.5	35.2	33.1	21.9	22.4	12.3	293

Tanglewood System		
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Well	January	February	March	April	May	June	July	August	September	October	November	December	Total
Tanglewood #1	0.1	0.0	0.0	0.1	0.1	0.0	0.6	0.0	0.0	1.0	10.0	1.7	14
System Total	0.1	0.0	0.0	0.1	0.1	0.0	0.6	0.0	0.0	1.0	10.0	1.7	14

Sisquoc System		
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Well	January	February	March	April	May	June	July	August	September	October	November	December	Total
Foxen Cyn #4	4.6	3.3	3.0	4.3	5.5	6.1	6.3	7.5	6.8	4.8	4.5	4.3	61
System Total	4.6	3.3	3.0	4.3	5.5	6.1	6.3	7.5	6.8	4.8	4.5	4.3	61
<b>Purveyor Total</b>	<b>538.3</b>	<b>361.4</b>	<b>528.0</b>	<b>735.0</b>	<b>867.4</b>	<b>858.4</b>	<b>953.7</b>	<b>935.2</b>	<b>866.3</b>	<b>691.5</b>	<b>686.9</b>	<b>441.2</b>	<b>8,463</b>

City of Guadalupe
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Well	January	February	March	April	May	June	July	August	September	October	November	December	Total
Fifth Street	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Obispo	41.2	48.4	64.8	80.8	83.2	83.3	87.0	87.9	82.2	78.1	71.9	69.6	878
<b>Purveyor Total</b>	<b>41.3</b>	<b>48.5</b>	<b>65.0</b>	<b>80.8</b>	<b>83.2</b>	<b>83.3</b>	<b>87.0</b>	<b>87.9</b>	<b>82.2</b>	<b>78.1</b>	<b>71.9</b>	<b>69.6</b>	<b>879</b>

<b>Total Municipal Pumpage</b>	<b>15,957</b>
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**Table 3.2-1b**  
**Municipal Surface Water Deliveries in 2009**  
**Santa Maria Valley Management Area**  
(in acre-feet)

**City of Santa Maria**

	January	February	March	April	May	June	July	August	September	October	November	December	Total
SWP Deliveries	441.8	379.6	493.9	632.2	759.6	825.3	913.7	902.1	910.5	756.2	209.4	416.4	7,641
Transfers to GSWC	0.6	0.7	0.4	2.0	6.9	8.9	18.3	13.0	22.9	8.6	1.6	0.2	84
<b>Purveyor Total</b>	<b>441.3</b>	<b>378.8</b>	<b>493.5</b>	<b>630.3</b>	<b>752.7</b>	<b>816.5</b>	<b>895.4</b>	<b>889.1</b>	<b>887.7</b>	<b>747.7</b>	<b>207.9</b>	<b>416.2</b>	<b>7,557</b>

**Golden State Water Company**

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Orcutt System													
Transfers from Santa Maria	0.6	0.7	0.4	2.0	6.9	8.9	18.3	13.0	22.9	8.6	1.6	0.2	84
System Total	0.6	0.7	0.4	2.0	6.9	8.9	18.3	13.0	22.9	8.6	1.6	0.2	84
Tanglewood System													
SWP Deliveries	13.8	11.1	13.5	16.7	20.0	20.5	21.2	18.8	18.8	14.3	2.5	10.5	182
System Total	13.8	11.1	13.5	16.7	20.0	20.5	21.2	18.8	18.8	14.3	2.5	10.5	182
<b>Purveyor Total</b>	<b>14.4</b>	<b>11.8</b>	<b>13.9</b>	<b>18.7</b>	<b>26.9</b>	<b>29.4</b>	<b>39.6</b>	<b>31.8</b>	<b>41.7</b>	<b>22.9</b>	<b>4.0</b>	<b>10.8</b>	<b>266</b>

**City of Guadalupe**

	January	February	March	April	May	June	July	August	September	October	November	December	Total
SWP Deliveries	27.9	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38
<b>Purveyor Total</b>	<b>27.9</b>	<b>9.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>38</b>

**Total Municipal Deliveries 7,861**

Table 3.2-1c Historical Municipal Water Requirements and Supplies Santa Maria Valley Management Area															
Year	Groundwater Pumping (afy)				Surface Water Deliveries (afy)							Total Municipal Water Supplies (afy)			
				Total	City of Santa Maria			Golden State Water Company			City of Guadalupe	Total			
	City of Santa Maria	Golden State Water Company	City of Guadalupe		SWP Deliveries to City of Santa Maria	Transfers to Golden State Water Company	Net Total	SWP Deliveries to Golden State Water Company	Transfers from City of Santa Maria	Net Total			City of Santa Maria	Golden State Water Company	City of Guadalupe
1950	1,866	550	533	2,949	----	----	----	----	----	----	----	0	1,866	550	533
1951	1,847	640	540	3,027	----	----	----	----	----	----	----	0	1,847	640	540
1952	2,298	730	548	3,576	----	----	----	----	----	----	----	0	2,298	730	548
1953	2,732	820	556	4,108	----	----	----	----	----	----	----	0	2,732	820	556
1954	2,610	910	563	4,083	----	----	----	----	----	----	----	0	2,610	910	563
1955	2,688	1,000	566	4,254	----	----	----	----	----	----	----	0	2,688	1,000	566
1956	2,866	1,040	574	4,480	----	----	----	----	----	----	----	0	2,866	1,040	574
1957	2,845	1,080	582	4,507	----	----	----	----	----	----	----	0	2,845	1,080	582
1958	2,930	1,120	590	4,640	----	----	----	----	----	----	----	0	2,930	1,120	590
1959	3,676	1,160	598	5,434	----	----	----	----	----	----	----	0	3,676	1,160	598
1960	3,749	1,500	600	5,849	----	----	----	----	----	----	----	0	3,749	1,500	600
1961	4,618	1,544	608	6,771	----	----	----	----	----	----	----	0	4,618	1,544	608
1962	5,083	1,588	617	7,288	----	----	----	----	----	----	----	0	5,083	1,588	617
1963	5,245	1,633	626	7,503	----	----	----	----	----	----	----	0	5,245	1,633	626
1964	6,267	1,677	634	8,578	----	----	----	----	----	----	----	0	6,267	1,677	634
1965	6,282	1,725	633	8,640	----	----	----	----	----	----	----	0	6,282	1,725	633
1966	6,476	1,810	642	8,927	----	----	----	----	----	----	----	0	6,476	1,810	642
1967	5,993	1,894	651	8,538	----	----	----	----	----	----	----	0	5,993	1,894	651
1968	6,580	1,979	660	9,219	----	----	----	----	----	----	----	0	6,580	1,979	660
1969	6,538	2,064	669	9,271	----	----	----	----	----	----	----	0	6,538	2,064	669
1970	7,047	2,150	666	9,863	----	----	----	----	----	----	----	0	7,047	2,150	666
1971	7,000	2,415	675	10,090	----	----	----	----	----	----	----	0	7,000	2,415	675
1972	6,000	2,460	685	9,145	----	----	----	----	----	----	----	0	6,000	2,460	685
1973	6,700	2,565	694	9,959	----	----	----	----	----	----	----	0	6,700	2,565	694
1974	7,200	2,770	704	10,674	----	----	----	----	----	----	----	0	7,200	2,770	704
1975	7,700	3,500	714	11,914	----	----	----	----	----	----	----	0	7,700	3,500	714
1976	8,033	4,367	845	13,245	----	----	----	----	----	----	----	0	8,033	4,367	845
1977	7,509	4,868	781	13,158	----	----	----	----	----	----	----	0	7,509	4,868	781
1978	7,446	4,743	722	12,911	----	----	----	----	----	----	----	0	7,446	4,743	722
1979	8,142	5,274	666	14,082	----	----	----	----	----	----	----	0	8,142	5,274	666
1980	8,754	5,820	762	15,336	----	----	----	----	----	----	----	0	8,754	5,820	762
1981	8,621	6,366	738	15,725	----	----	----	----	----	----	----	0	8,621	6,366	738
1982	8,313	5,765	648	14,726	----	----	----	----	----	----	----	0	8,313	5,765	648
1983	8,903	5,714	733	15,350	----	----	----	----	----	----	----	0	8,903	5,714	733
1984	10,299	7,079	961	18,339	----	----	----	----	----	----	----	0	10,299	7,079	961
1985	10,605	7,276	908	18,789	----	----	----	----	----	----	----	0	10,605	7,276	908
1986	11,033	7,625	798	19,456	----	----	----	----	----	----	----	0	11,033	7,625	798
1987	11,191	7,916	757	19,864	----	----	----	----	----	----	----	0	11,191	7,916	757
1988	11,849	8,678	823	21,350	----	----	----	----	----	----	----	0	11,849	8,678	823
1989	12,464	8,860	828	22,152	----	----	----	----	----	----	----	0	12,464	8,860	828
1990	12,052	8,691	724	21,467	----	----	----	----	----	----	----	0	12,052	8,691	724
1991	11,170	8,210	908	20,288	----	----	----	----	----	----	----	0	11,170	8,210	908
1992	12,116	8,381	798	21,295	----	----	----	----	----	----	----	0	12,116	8,381	798
1993	11,984	8,174	757	20,915	----	----	----	----	----	----	----	0	11,984	8,174	757
1994	12,129	8,571	823	21,523	----	----	----	----	----	----	----	0	12,129	8,571	823
1995	12,267	8,447	828	21,542	----	----	----	----	----	----	----	0	12,267	8,447	828
1996	12,780	9,960	724	23,464	----	----	----	----	----	----	----	0	12,780	9,960	724
1997	8,016	9,441	603	18,060	4,506	0	4,506	0	0	0	175	4,681	12,522	9,441	778
1998	411	7,922	545	8,878	10,674	0	10,674	79	0	79	233	10,986	11,085	8,001	778
1999	454	9,044	545	10,043	11,405	0	11,405	219	0	219	233	11,857	11,859	9,263	778
2000	548	9,131	545	10,224	12,174	42	12,132	226	42	268	233	12,633	12,679	9,399	778
2001	2,699	8,772	545	12,016	9,914	20	9,894	217	20	237	233	10,364	12,594	9,009	778
2002	468	9,211	545	10,224	12,879	35	12,844	220	35	255	233	13,332	13,312	9,466	778
2003	1,178	8,866	545	10,589	12,325	4	12,321	201	4	205	233	12,759	13,499	9,071	778
2004	1,223	9,159	487	10,869	12,427	0	12,427	197	0	197	345	12,969	13,650	9,356	832
2005	897	8,626	452	9,975	12,960	43	12,917	177	43	220	362	13,499	13,814	8,846	814
2006	543	8,511	412	9,466	13,128	61	13,067	182	61	243	471	13,781	13,610	8,754	883
2007	2,550	9,393	580	12,523	12,352	120	12,232	197	120	317	483	13,032	14,782	9,710	1,063
2008	6,631	9,083	636	16,350	7,652	48	7,604	180	48	228	361	8,193	14,235	9,311	997
2009	6,615	8,463	879	15,957	7,641	84	7,557	182	84	266	38	7,861	14,172	8,729	917

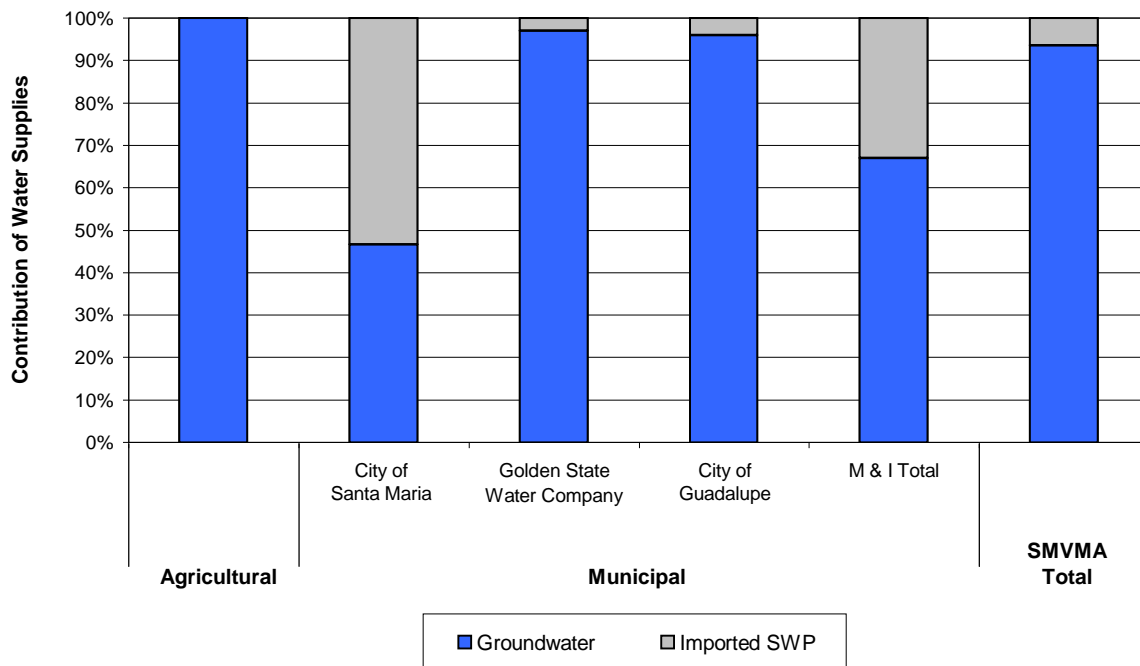
estimated

731af reported total for 2000  
(total use or total groundwater)

**Table 3.3-1a**  
**Total Water Requirements and Supplies 2009**  
**Santa Maria Valley Management Area**  
**(acre-feet)**

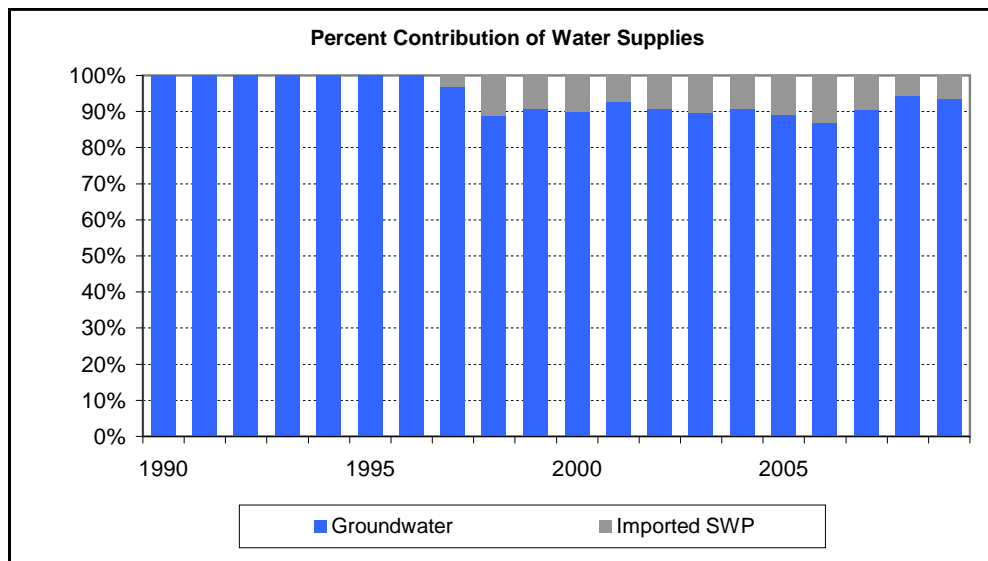
Water Use Category	Water Requirements	Water Supplies			
		Groundwater	SWP imported	SWP transfer <sup>1</sup>	Net SWP
Agricultural					
Total	98,085	98,085	--	--	--
Municipal					
City of Santa Maria	14,172	6,615	7,641	-84	7,557
Golden State Water Company	8,729	8,463	182	84	266
City of Guadalupe	917	879	38	--	38
Total	23,818	15,957	7,861	--	7,861
SMVMA Total	121,903	114,042			7,861

<sup>1</sup>Transfer within SMVMA from Santa Maria to Golden State Water Company



**Table 3.3-1b**  
**Recent Historical Total Water Supplies**  
**Santa Maria Valley Management Area**  
**(Acre-feet)**

Year	<i>Total Groundwater</i>	<i>Total Imported SWP Water</i>	<b>Total Water Supply</b>
1990	148,254	0	<b>148,254</b>
1991	138,963	0	<b>138,963</b>
1992	132,461	0	<b>132,461</b>
1993	121,124	0	<b>121,124</b>
1994	140,956	0	<b>140,956</b>
1995	108,640	0	<b>108,640</b>
1996	140,691	0	<b>140,691</b>
1997	150,451	4,681	<b>155,132</b>
1998	85,778	10,986	<b>96,765</b>
1999	117,013	11,857	<b>128,870</b>
2000	111,306	12,633	<b>123,938</b>
2001	130,532	10,364	<b>140,896</b>
2002	131,557	13,332	<b>144,889</b>
2003	110,099	12,759	<b>122,859</b>
2004	128,799	12,969	<b>141,768</b>
2005	110,469	13,499	<b>123,968</b>
2006	90,130	13,781	<b>103,911</b>
2007	125,318	13,032	<b>138,350</b>
2008	134,962	8,193	<b>143,155</b>
2009	114,042	7,861	<b>121,903</b>



## **4. Water Disposition**

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The Stipulation directs that there be an annual accounting of the disposition of water supplies in the SMVMA. The primary uses of water in the SMVMA are for agricultural irrigation and for domestic and related municipal uses, as detailed in Chapter 3, where most of the water is consumptively used. The balance of water supplies primarily flow, or are disposed, back to the groundwater basin via deep percolation of applied irrigation that exceeds agricultural crop water requirements, via deep percolation of landscape or other non-agricultural irrigation, and via purposeful infiltration of treated municipal waste water. Other disposition of water in the SMVMA includes purposeful consumptive use (evapotranspiration) via spray irrigation for disposal of some treated municipal waste water, minor agricultural drainage in localized areas of low surface elevation and high shallow groundwater levels and, potentially, purposeful export of water to another management area. This chapter quantitatively addresses the two largest of the preceding components of water disposition, deep percolation of applied irrigation and discharge of treated municipal waste water. It also includes estimated return flows from landscape irrigation. No data are available with regard to agricultural drainage, so there is no quantitative discussion of that component of disposition herein. Finally, the Stipulation includes provisions for future intra-basin export of water from the SMVMA to the adjacent NMMA; planning continued in 2009 on potential water sales from the City of Santa Maria to the Nipomo Community Services District (Nipomo CSD), and the technical concerns regarding that planned sale initially expressed in the 2008 annual report of hydrogeologic conditions in the SMVMA are further discussed below.

### **4.1 Agricultural Return Flows**

The largest component of overall return flows in the SMVMA originates as applied water for agricultural irrigation. Except for local areas near the Santa Maria River toward the western end of the SMVMA where subsurface drainage removes shallow groundwater beneath irrigated lands, applied irrigation in excess of crop water requirements is considered to deep percolate beyond crop rooting depths and result in return flows to groundwater. The estimation of agricultural water requirements and associated groundwater pumping, as described in Section 3.1, is based on crop areas, respective crop water requirements, and estimated performance of various irrigation systems. For the range of crops and irrigation systems in the SMVMA, most crops are considered to consumptively use about 80 to 85 percent of the water applied to them, resulting in an estimated 15 to 20 percent of applied water exceeding crop consumption and deep percolating as return flow to the underlying aquifer system (the one exception to the preceding ranges is wine grapes, where 95% of applied water is estimated to be consumptively used, resulting in return flow of only 5% of applied water).

For the full range of crop categories in the SMVMA, return flow rates in 2009 are estimated to range from less than 0.1 af/ac for Vineyard, to about 0.4 af/ac for the predominant Rotational Vegetables in the Valley, to a maximum of about 0.8 af/ac for Pasture. The respective estimated agricultural return flow rates are detailed in Table 4.1-1. When combined with their respective

individual crop acreages, it is estimated that just under 18,000 af of applied agricultural irrigation deep percolated to groundwater as return flows in the SMVMA in 2009.

## **4.2 Treated Municipal Waste Water Discharge**

There are three municipal waste water treatment plants in the SMVMA: the City of Santa Maria Plant located west of the City; the Laguna Sanitation District Plant west of the Santa Maria Airport; and the City of Guadalupe Plant west of the City (see Figure 1.3-1a). At the City of Santa Maria WWTP, influent volumes are metered and recorded, and all treated water is discharged to percolation ponds near Green Canyon adjacent to the Plant facilities. At the Laguna Sanitation District WWTP, influent volumes are metered and recorded, and the large majority of treated water (95%) is discharged to permanent spray fields north and west of the Plant facilities and to Santa Maria airport lands for irrigation. Of the remaining effluent, a small amount (3.5%) is brine derived from reverse osmosis treatment of part of the total waste water flow; that brine is discharged to a deep injection well (a converted oil well, completed below the base of fresh groundwater). The balance of effluent (1.5%) is conveyed to an oil lease near Orcutt (Santa Maria Pacific) for industrial use. At the City of Guadalupe WWTP, influent volumes are recorded and all treated water is discharged to permanent spray fields north of the Plant facilities, across the Santa Maria River (with storage pond north of the facility).

Monthly influent data from 2009 are shown by facility and method of disposal in Table 4.2-1. For all three plants, effluent volumes are estimated to be 90 percent of the metered influent, with the remainder assumed to be lost (consumed) during treatment.

In 2009, an estimated 11,100 af of treated municipal waste water were discharged in the SMVMA. About 77 percent (8,500 af) of that total was discharged to the percolation ponds of the City of Santa Maria WWTP. About 1,900 af of treated water were discharged to spray irrigation of permanent pasture of the Laguna Sanitation District WWTP and irrigation of Santa Maria airport lands. Approximately 70 af of brine were discharged by deep well injection and less than 30 af of treated water were utilized for industrial purposes on an oil lease near Orcutt. Slightly less than 600 af of treated water were discharged to spray irrigation by the City of Guadalupe.

The Stipulation has provisions for each of the municipal water purveyors in the SMVMA to have rights to recover return flows that derive from their respective importations of water from the SWP. Those rights are to specific fractions of SWP water use in the preceding year; they are limited in time to recovery in the following year, and thus do not carry over or otherwise accumulate in the basin. The respective fractions for the three municipal purveyors are 65 percent for Santa Maria and 45 percent each for Southern California Water Company (now GSWC) and for Guadalupe. The Stipulation is silent as to the basis for the respective fractions; logically, however, they would have some basis in the fate of imported SWP water, i.e. what fraction ends up being “disposed” as a “return flow” to the groundwater basin.

Interpretation of the municipal water supplies and waste water processes in the SMVMA in 2009 suggests that the 65 percent “return flow” fraction for Santa Maria is approximately representative of the relative amount of overall Santa Maria water supply that primarily ends up

as effluent discharged to spreading basins for infiltration to the groundwater basin. While the 8,520 af of estimated effluent in Table 4.2.1 is mostly reflective of water that originates as Santa Maria water supply, it is slightly inflated by the net interception of some waste water, by the Santa Maria sewer system, from Orcutt (originally from GSWC water supply). On the other hand, effluent from the Santa Maria WWTP does not account for “return flows” that derive from landscape irrigation with municipal water supply. Deduction of the former and addition of the latter suggest that, depending on how much actually infiltrates from the spreading basins, the net “return flow” to groundwater from the Santa Maria municipal water supply system could be as high as 65 percent of its total water supply. Since the Santa Maria water supply is a commingled combination of groundwater and SWP water, the “return flow” fraction attributable to SWP water would be the same as that for the commingled supply. An accounting of waste stream volumes from the different sources as influent to the Santa Maria WWTP (Santa Maria and GSWC) and supporting calculations of the different types of return flows (WWTP and landscape irrigation) for 2009 is provided in Appendix C.

Interpretation of the GSWC/Laguna Sanitation District and Guadalupe water supplies and waste water processes in 2009 suggests that the 45 percent return flow fractions in the Stipulation are not representative of relative amounts of those respective water supplies that end up as groundwater recharge which, in turn, would be recoverable by pumping from the basin. In the case of Guadalupe, metered influent to the treatment plant represents nearly 72 percent of its water supply, and estimated effluent is equal to about 65 percent of its water supply. While both fractions exceed the 45 percent return flow fraction in the Stipulation, the disposal method (spray irrigation) is not conducive to groundwater recharge but is, conversely, conducive to consumption of the effluent by evapotranspiration. Ignoring the fact that the Guadalupe spray field is located over an area where the deeper part of the aquifer system is confined, constraining the effectiveness of recharge via application at the ground surface, a reasonable estimate of any deep percolation beneath the Guadalupe spray field would be in the range of about 10 to 15 percent of its water supply; addition of return flows from landscape irrigation may increase the overall percentage to around 22 percent, far less than the stipulated 45 percent.

While the overall sewer and waste water treatment system at the Laguna Sanitation District is more difficult to analyze, the combination of treated volumes and disposal method suggests that far less than the stipulated 45 percent of water supply ends up as groundwater recharge. The metered influent to the Laguna plant represents only about 25 percent of the GSWC water supply to its Orcutt, Lake Marie and Tanglewood systems; estimated effluent represents only about 22 percent of those water supplies. With credit for the net sewer fraction that is intercepted to the Santa Maria plant, those fractions increase to about 31 and 27 percent, respectively. Beyond those low fractions, the spray irrigation disposal method is, as with Guadalupe, not conducive to groundwater recharge. A reasonable estimate of deep percolation to groundwater recharge beneath the Laguna spray field and airport lands would be about 20 percent of the estimated effluent, equivalent to only about 5 percent of the GSWC water supplies. Addition of recharge from waters intercepted to the Santa Maria plant would increase the estimate of return flows to about 10 percent of total GSWC water supplies. Further addition of estimated recharge that derives from landscape irrigation in the GSWC service area would increase the total return flow fraction to about 19 percent. All the preceding fractions are far less than the stipulated 45

percent. The treated volumes and disposal methods for waters supplied do not support the credit for return flows of SWP water designated for GSWC in the Stipulation.

As long as the existing waste water treatment and disposal processes remain in place at the Laguna Sanitation District and City of Guadalupe WWTPs, there is no technical support for the 45 percent fractions that were included in the Stipulation for GSWC (in the case of Laguna Sanitation District) and Guadalupe to recover return flows from their respective use of SWP water. Any “recovery” of those amounts of water by groundwater pumping would actually be pumping of a much smaller fraction (one-half or less of the 45 percent) of “return flow,” with the balance being groundwater unrelated to imported water use by either entity.

Analysis of municipal return flows since 1997, when SWP water importation commenced, shows that the percentages of total water supply as return flows for each purveyor over the recent historical period are similar to those of 2009, as seen in Table 4.2-2. With a combination of return flows from WWTP effluent, after accounting for varying disposal methods, and return flows from landscape irrigation, the percentages of total water supply for Santa Maria, GSWC, and Guadalupe averaged 66, 18, and 20 percent, respectively since 1997. A detailed analysis of influent amounts, accounting for intercepted waste streams from the GSWC systems to the Santa Maria WWTP and from the City of Santa Maria area to the Laguna Sanitation District WWTP, and disposition of effluent for the three WWTPs since 1997 is included in Appendix C.

### **4.3 Exported Water**

No water was exported from the SMVMA in 2009. However, planning continued in 2009 for future delivery of water from the SMVMA to the NMMA, specifically from the City of Santa Maria to the Nipomo CSD. The Stipulation includes provisions specific to the NMMA for implementation of a Memorandum of Understanding (MOU) between the City and Nipomo CSD that provides for the sale of up to 3,000 af of “supplemental water” per year by Santa Maria to Nipomo; that sale would be equivalent to an intra-basin export from one management area (the SMVMA) to another (the NMMA). Notable actions now completed on that potential sale include certification of environmental documentation and completion of a Wholesale Water Supply Agreement (successor to the MOU) between the City of Santa Maria and the Nipomo CSD.

Both the environmental documentation and the Wholesale Water Supply Agreement describe a potentially phased delivery of supplemental water from Santa Maria whereby Nipomo CSD would purchase minimum quantities of 2,000 afy for the first ten years of the Agreement, 2,500 afy for the next nine years, and 3,000 afy for the balance of the term of the Agreement (through 2085). Deliveries under the Agreement are specified to begin in the first year after completion of pipeline interconnection between Santa Maria and Nipomo CSD; that interconnection was the focus of the certified environmental documentation on the Nipomo CSD “Waterline Intertie” project. Both the environmental documentation and the Wholesale Agreement also describe provisions whereby Nipomo CSD may request delivery of additional supplemental water, up to an additional 3,200 afy; the latter goes beyond the provisions in the Stipulation for the sale of up to 3,000 afy.

Since the Wholesale Agreement and the environmental documentation on the Waterline Intertie project reflect planned intra-basin export of water from one management area to another, three technical concerns about the planned project were expressed in the initial (2008) annual report for the SMVMA; as included in that report, those technical concerns were:

- “First, while there has apparently been extensive analysis of the need for supplemental water in the NMMA, prior to and through a recently certified EIR on the project, the Nipomo CSD “Waterline Intertie”, there has been no analysis to identify the existence of any surplus water in the SMVMA. There has similarly been no analysis of any impacts to water supplies in the SMVMA that might derive from an export as described in the MOU.”
- “Second, the MOU includes provisions that the water delivered by Santa Maria shall be of the same quality that the City delivers to its customers; the project EIR notes that the water will be a mix of City groundwater and SWP water. In the year prior to the signing of the MOU, the City delivered an average blend of 87 percent SWP water and 13 percent local groundwater to its customers. In 2008, those respective fractions were 53 percent and 47 percent. Using both sets of fractions for illustration purposes only, the delivery of “supplemental” water to the NMMA could represent about 1,600 to 2,600 afy of SWP water and about 400 to 1,400 afy of groundwater pumped from the SMVMA. There has been no analysis of the source(s), pumping locations, or potential impacts of such groundwater pumping for export from the SMVMA.”
- “Finally, and perhaps of greatest concern, there is an apparent conflict with regard to importation and use of SWP water between the Stipulation and the MOU. In the Stipulation provisions specific to the SMVMA, the City of Santa Maria is to import and use within the SMVMA at least 10,000 afy of SWP water. The only exception to that amount of importation and use is in years when SWP availability to Santa Maria is less than 10,000 af; in those years, Santa Maria is to import and use all its available SWP supply in the SMVMA. However, if Santa Maria were to export water in accordance with the MOU in years when its SWP supply was less than 10,000 af (i.e. in years when overall SWP reliability is less than about 60 percent), Santa Maria would be out of compliance with the Stipulation in all those years, leading to more groundwater pumping for municipal supply in the SMVMA than envisioned by the Stipulation.”

While no new technical work on the preceding issues was completed in 2009, Santa Maria has initiated efforts to address them as follows. On the first item, the City has listed a combination of water supplies that, in the quantities listed by the City, notably exceed its existing and currently projected water requirements. Those water supplies include appropriative rights to groundwater in the SMVMA, reportedly quantified in the Judgment; a portion of the yield from Twitchell Reservoir operations; SWP supplies; and return flows from SWP use by the City. While those aggregate supplies exceed the City’s water requirements, there remains no analysis to identify whether there are sufficient supplies in the overall SMVMA whereby there is a “surplus” available for intra-basin transfer without causing a shortage in the SMVMA. Through

its Utilities Department, the City has indicated a willingness and intent to analyze that issue in 2010.

On the second concern expressed in the 2008 report, the City's blended fractions of SWP water and local groundwater were essentially the same in 2009 as in the preceding year: 53 percent SWP water and 47 percent local groundwater. Had the Water Sales Agreement been operational with SWP availability as it was in 2009 (40%), the fractional use of SWP water to a combination of City customers and the Nipomo CSD would have decreased to about 41 percent; SWP water use in the SMVMA would have decreased from full availability (7,120 af) to about 5,900 af; and total groundwater pumping by the City would have increased from about 6,600 af to slightly more than 10,000 af. As indicated in the 2008 annual report, there has been no analysis of the source(s), pumping locations, or potential impacts of such an increase in groundwater pumping on the SMVMA. As with the first concern discussed above, however, the Santa Maria Utilities Department has indicated a willingness and intent to analyze that issue in 2010.

On the last concern expressed in the 2008 report, the preceding discussion is a good illustration of the potential conflict between the Stipulation and the Water Sales Agreement (the MOU when included in the Stipulation). Had the Water Sales Agreement been operational with SWP availability as it was in 2009 (40%), and with the City's SWP Table A Amount as it now is (17,800 af), the City would have been unable to satisfy both the Water Sales Agreement and the Stipulation. Since SWP availability to Santa Maria in 2009 was less than 10,000 af, the Stipulation calls for all that water to be used within the SMVMA (which occurred, as discussed in Section 3.2.2 above). Without access to additional SWP water, however, the City could not dedicate all its current SWP allocation to the SMVMA (as required by the Stipulation when that allocation is less than 10,000 af) and also deliver any to the Nipomo CSD. If the Water Sales Agreement were operational, such would be the case in all year-types when SWP allocations were less than about 70 percent. The City recognizes this issue and, based on informal communication with its Utilities Department, has begun to work on its resolution by initiating efforts to increase its SWP Table A water supply, but on a schedule that recognizes the practical realities that remain to be addressed before the Nipomo CSD will be in a position to request delivery of water under the Sales Agreement. Notable among those practicalities are a yet-to-be completed MOU among water purveyors in the NMMA and a yet-to-be scheduled election in the NMMA to authorize construction of the pipeline connection to Santa Maria. While those practicalities are being addressed in the NMMA, Santa Maria has begun work toward ultimately securing up to 10,000 af of additional SWP allocation from some combination of suspended SWP Table A allocation in Santa Barbara County and unused SWP Table A allocation in San Luis Obispo County. The City's described intention is to secure the additional SWP supplies in order to enable deliveries under the Water Sales Agreement while also satisfying the provisions of the Stipulation; however, it is also attempting to limit its financial commitment to purchase additional SWP supplies until it is certainly needed, i.e. when the Nipomo CSD completes all its requirements to actually request water deliveries from Santa Maria.

**Table 4.1-1**  
**Applied Crop Water Requirements, Total Agricultural Water Requirements and Return Flows, 2009**  
**Santa Maria Valley Management Area**

<b>Crop Category</b>	<b>Evapotranspiration of Crop ETc (in)</b>	<b>Effective Precipitation P<sub>E</sub> (in)</b>	<b>Evapotranspiration of Applied Water ETaw (in)</b>	<b>Evapotranspiration of Applied Water ETaw (af/ac)</b>	<b>Distribution Uniformity DU (%)</b>	<b>Applied Water AW (af/ac)</b>	<b>Crop Acreage</b>	<b>Estimated Water Requirements (af)</b>	<b>Applied Water above ETaw AW-ETaw (in)</b>	<b>Applied Water above ETaw AW-ETaw (ft)</b>	<b>Agricultural Return Flow (af)</b>
Rotational Vegetables <sup>1</sup>	23.24	2.18	21.06	1.76	80	2.19	33,737	74,011	5.3	0.44	14,802
Strawberries <sup>1</sup>	16.64	1.43	15.21	1.27	85	1.49	10,375	15,471	2.7	0.22	2,321
Vineyard <sup>2</sup>	---	---	14.4	1.2	95	1.3	4,765	6,019	0.8	0.06	301
Pasture <sup>1</sup>	44.16	5.79	38.37	3.20	80	4.00	441	1,763	9.6	0.80	353
Grain <sup>2</sup>	---	---	4.0	0.3	80	0.4	580	239	1.0	0.08	48
Nursery <sup>3</sup>	---	---	---	---	---	2.0	239	478	4.8	0.40	96
Deciduous <sup>2</sup>	---	---	28.8	2.4	85	2.8	13	37	5.1	0.42	6
Avocado <sup>2</sup>	---	---	30.0	2.5	85	2.9	23	68	5.3	0.44	10
Fallow <sup>4</sup>	---	---	---	---	---	---	1,244	---	---	---	---
<b>Total</b>							<b>51,417</b>	<b>98,085</b>			<b>17,935</b>

1) CIMIS-based applied crop water duties

2) Reported ETaw-based applied crop water duties

3) NMMA applied crop water duty; DU assumed as 80%

4) No applied water

**Table 4.2-1**  
**Treated Municipal Waste Water Discharge in 2009**  
**Santa Maria Valley Management Area**  
**(in acre-feet)**

Month	City of Santa Maria <sup>1</sup>		Laguna Sanitation District WWTP <sup>2</sup>					City of Guadalupe <sup>3</sup>		Total Municipal Waste Water Discharge					
	Metered Influent	Estimated Effluent	Metered Influent	Estimated Effluent				Metered Influent	Estimated Effluent	Influent	Effluent				
	Total (af)	Total (af)	Total (af)	irrigation <sup>4</sup> (af)	injection (af)	industrial use <sup>5</sup> (af)	Total (af)	Total (af)	Total (af)	Total (af)	ponds (af)	irrigation (af)	injection (af)	industrial use (af)	Total (af)
January	705.4	634.9	213.1	184	7.1	1.1	192	52.8	47.6	971	635	231	7	1	874
February	656.9	591.2	163.6	140	5.4	1.6	147	47.8	43.0	868	591	183	5	2	782
March	755.9	680.3	240.5	208	6.7	1.2	216	53.8	48.4	1,050	680	257	7	1	945
April	763.7	687.4	202.2	174	7.4	0.6	182	54.0	48.6	1,020	687	223	7	1	918
May	826.3	743.7	202.9	170	8.2	4.6	183	55.2	49.7	1,084	744	220	8	5	976
June	824.5	742.1	184.8	154	7.5	4.8	166	54.3	48.9	1,064	742	203	8	5	957
July	855.8	770.2	166.1	142	7.0	0.7	149	56.6	50.9	1,079	770	193	7	1	971
August	873.0	785.7	171.2	147	5.7	1.7	154	57.6	51.9	1,102	786	199	6	2	992
September	808.9	728.0	178.3	158	0.6	2.4	160	57.2	51.5	1,044	728	209	1	2	940
October	846.3	761.7	171.2	147	4.0	3.0	154	61.4	55.2	1,079	762	202	4	3	971
November	781.2	703.1	166.5	139	7.6	2.8	150	54.1	48.7	1,002	703	188	8	3	902
December	773.0	695.7	176.1	149	6.0	3.8	158	58.7	52.8	1,008	696	201	6	4	907
<b>Annual Totals</b>	9,471	8,524	2,237	1,911	73	28	2,013	664	597	<b>12,371</b>	8,524	2,509	73	28	<b>11,134</b>

1) Total effluent estimated based on assumed loss of 10% during treatment (90% of metered influent); all effluent discharged to ponds.

2) Total effluent estimated as 10% of metered influent; brine discharged to deep injection well and treated water for industrial use is metered, with the balance discharged for irrigation.

3) Total effluent estimated as 10% of metered influent; all effluent discharged to spray fields.

4) Includes spray irrigation on Laguna SD fields and irrigation on Santa Maria airport lands.

5) For industrial use on oil lease near Orcutt.

**Table 4.2-2**  
**Estimated Recent Historical Return Flows from WWTPs and Landscape Irrigation**  
**Santa Maria Valley Management Area**  
(all units in afy unless otherwise noted)

Year	Total Water Use				Effluent Available for Return Flows					Irrigation Available for Return Flows			Return Flows													
					Santa Maria		GSWC		Guadalupe	Santa Maria					Golden State Water Company					Guadalupe						
	from WWTP	from WWTP	from WWTP	from WWTP	from WWTP	from WWTP	from landscape	% of Total	% of Water Use	from WWTP	from landscape	% of Total	% of Water Use <sup>8</sup>	from WWTP	from landscape	% of Total	% of Water Use									
	(SM)	(LSD)	(SM)	(LSD)	(Guad)	(SM) <sup>5</sup>	(LSD) <sup>6</sup>	irrigation <sup>7</sup>	(SM) <sup>5</sup>	(LSD) <sup>6</sup>	irrigation <sup>7</sup>	(SM) <sup>5</sup>	(LSD) <sup>6</sup>	irrigation <sup>7</sup>	(Guad) <sup>6</sup>	irrigation <sup>7</sup>										
1997	12,522	9,441	9,387	778	7,279	83	296	2,269	420	4,758	4,248	350	7,279	17	952	8,247	66	296	454	850	1,600	16.9	84	70	154	20
1998	11,085	8,001	7,960	778	6,434	82	302	1,874	420	4,212	3,601	350	6,434	16	842	7,293	66	302	375	720	1,397	17.5	84	70	154	20
1999	11,859	9,263	9,193	778	6,899	82	298	2,215	420	4,506	4,169	350	6,899	16	901	7,816	66	298	443	834	1,574	17.0	84	70	154	20
2000	12,679	9,399	9,342	778	7,223	83	309	2,459	420	4,818	4,230	350	7,223	17	964	8,203	65	309	492	846	1,647	17.5	84	70	154	20
2001	12,594	9,009	8,950	778	7,538	83	323	2,500	420	4,786	4,054	350	7,538	17	957	8,511	68	323	500	811	1,634	18.1	84	70	154	20
2002	13,312	9,466	9,409	778	7,661	83	320	2,287	420	5,059	4,259	350	7,661	17	1,012	8,689	65	320	457	852	1,629	17.2	84	70	154	20
2003	13,499	9,071	9,023	778	7,766	83	431	2,281	420	5,130	4,082	350	7,766	17	1,026	8,809	65	431	456	816	1,704	18.8	84	70	154	20
2004	13,650	9,356	9,302	832	8,201	83	399	2,240	449	5,187	4,210	374	8,201	17	1,037	9,255	68	399	448	842	1,689	18.1	90	75	165	20
2005	13,814	8,846	8,802	814	8,374	82	317	1,990	439	5,249	3,981	366	8,374	16	1,050	9,441	68	317	398	796	1,511	17.1	88	73	161	20
2006	13,610	8,754	8,700	883	8,251	81	288	1,724	477	5,172	3,939	397	8,251	16	1,034	9,302	68	288	345	788	1,421	16.2	95	79	175	20
2007	14,782	9,710	9,652	1,063	8,074	81	368	1,854	574	5,617	4,369	478	8,074	16	1,123	9,214	62	368	371	874	1,612	16.6	115	96	210	20
2008	14,235	9,311	9,255	997	8,123	81	444	1,963	570	5,409	4,190	449	8,123	16	1,082	9,222	65	444	393	838	1,675	18.0	114	90	204	20
2009	14,172	8,729	8,668	917	8,057	81	467	1,932	598	5,385	3,928	413	8,057	16	1,077	9,150	65	467	386	786	1,639	18.8	120	83	202	22
													avg		66		avg		18				avg		20	

Estimated

SM City of Santa Maria  
GSWC Golden State Water Company  
Guad City of Guadalupe  
LSD Laguna Sanitation District

- 1) Excludes Sisquoc System water use (for effluent return flow calculations).  
2) Percentage of SM total water use as landscape irrigation = 38 (35 to 38)  
3) Percentage of GSWC total water use as landscape irrigation = 45 (45 to 48)  
4) Percentage of Guad total water use as landscape irrigation = 45 (24 to 64)  
5) All effluent from Santa Maria WWTP percolation ponds assumed as return flows.  
6) 20 percent of effluent from Laguna SD and Guadalupe WWTP irrigation assumed as return flows.  
7) 20 percent of landscape irrigation assumed as return flows.  
8) Percentage of GSWC total water use as return flows.

**Table 4.3-1**  
**Water Requirements, Supplies, and Amounts Delivered under Current and Projected Conditions**  
**Santa Maria Valley Management Area**

**Current Conditions**

SWP		Water Requirements			City Water Supply					City Water Delivered**					
										SMVMA			NCSD		
Allocation (%)	Supply to City (af)	City (af)	NCSD (af)	Total (af)	SWP (af)	(%)*	Groundwater (af)	(%)*	Total (af)	SWP (af)	Groundwater (af)	Total (af)	SWP (af)	Groundwater (af)	Total (af)
100	17,800	14,235	3,000	17,235	17,235	100	0	0	17,235	14,235	0	14,235	3,000	0	3,000
90	16,020	14,235	3,000	17,235	16,020	93	1,215	7	17,235	13,231	1,004	14,235	2,789	211	3,000
80	14,240	14,235	3,000	17,235	14,240	83	2,995	17	17,235	11,761	2,474	14,235	2,479	521	3,000
75	13,350	14,235	3,000	17,235	13,350	77	3,885	23	17,235	11,026	3,209	14,235	2,324	676	3,000
70	12,460	14,235	3,000	17,235	12,460	72	4,775	28	17,235	10,291	3,944	14,235	2,169	831	3,000
65	11,570	14,235	3,000	17,235	11,570	67	5,665	33	17,235	9,556	4,679	14,235	2,014	986	3,000
60	10,680	14,235	3,000	17,235	10,680	62	6,555	38	17,235	8,821	5,414	14,235	1,859	1,141	3,000
50	8,900	14,235	3,000	17,235	8,900	52	8,335	48	17,235	7,351	6,884	14,235	1,549	1,451	3,000
40	7,120	14,235	3,000	17,235	7,120	41	10,115	59	17,235	5,881	8,354	14,235	1,239	1,761	3,000
30	5,340	14,235	3,000	17,235	5,340	31	11,895	69	17,235	4,410	9,825	14,235	930	2,070	3,000
20	3,560	14,235	3,000	17,235	3,560	21	13,675	79	17,235	2,940	11,295	14,235	620	2,380	3,000
10	1,780	14,235	3,000	17,235	1,780	10	15,455	90	17,235	1,470	12,765	14,235	310	2,690	3,000
Given:			* % of total water requirements by source							** provides for water delivered to be of equal quality					
City Table A (af) =		17,800													
City Water Req (af) =		14,235													
NCSD Water Req (af) =		3,000													

**Projected Conditions<sup>1</sup>**

SWP		Water Requirements			City Water Supply					City Water Delivered**					
										SMVMA			NCSD		
Allocation (%)	Supply to City (af)	City (af)	NCSD (af)	Total (af)	SWP (af)	(%)*	Groundwater (af)	(%)*	Total (af)	SWP (af)	GW (af)	Total (af)	SWP (af)	GW (af)	Total (af)
100	17,800	19,000	6,200	25,200	17,800	71	7,400	29	25,200	13,421	5,579	19,000	4,379	1,821	6,200
90	16,020	19,000	6,200	25,200	16,020	64	9,180	36	25,200	12,079	6,921	19,000	3,941	2,259	6,200
80	14,240	19,000	6,200	25,200	14,240	57	10,960	43	25,200	10,737	8,263	19,000	3,503	2,697	6,200
70	12,460	19,000	6,200	25,200	12,460	49	12,740	51	25,200	9,394	9,606	19,000	3,066	3,134	6,200
65	11,570	19,000	6,200	25,200	11,570	46	13,630	54	25,200	8,723	10,277	19,000	2,847	3,353	6,200
60	10,680	19,000	6,200	25,200	10,680	42	14,520	58	25,200	8,052	10,948	19,000	2,628	3,572	6,200
50	8,900	19,000	6,200	25,200	8,900	35	16,300	65	25,200	6,710	12,290	19,000	2,190	4,010	6,200
40	7,120	19,000	6,200	25,200	7,120	28	18,080	72	25,200	5,368	13,632	19,000	1,752	4,448	6,200
30	5,340	19,000	6,200	25,200	5,340	21	19,860	79	25,200	4,026	14,974	19,000	1,314	4,886	6,200
20	3,560	19,000	6,200	25,200	3,560	14	21,640	86	25,200	2,684	16,316	19,000	876	5,324	6,200
10	1,780	19,000	6,200	25,200	1,780	7	23,420	93	25,200	1,342	17,658	19,000	438	5,762	6,200
Given:			* % of total water requirements by source							** provides for water delivered to be of equal quality					
City Table A (af) =		17,800													
City Water Req (af) =		19,000													
NCSD Water Req (af) =		6,200													
1) City projected demand at build-out in 2022; NCSD projected deliveries from City by 2085 per Jan 5, 2010, Agreement															

1) City projected demand at build-out in 2022; NCSD projected deliveries from City by 2085 per Jan 5, 2010, Agreement

## **5. Conclusions and Recommendations**

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Conclusions drawn from analysis of hydrogeologic and water requirement and supply conditions in the SMVMA in 2009 are discussed in the following section, which is in turn followed by recommendations for ongoing data collection, basin management, and future analysis.

### **5.1 Conclusions**

Assessment of hydrogeologic conditions in 2009 showed that groundwater levels and general mineral quality in the shallow and deep aquifer zones remain within historical ranges for the SMVMA. As has historically been the case for several decades, the prevailing gradients for groundwater flow in both zones was reduced (flattened) in the vicinity of local pumping near the Santa Maria Airport, but groundwater flow continued through the area toward the coast where groundwater levels remained above sea level. Concentrations of nitrate in groundwater remained near or below detection limits in the deep aquifer zone, but continued to increase in the shallow zone near Orcutt, where elevated concentrations have resulted in reduction or cessation of municipal pumping from shallow water supply wells. Nitrate concentrations also continued to increase in portions of aquifer along the coast.

Water requirements, water supplies to meet those requirements, and disposition of water supplies in the SMVMA in 2009 can be summarized as follows. Total water requirements were about 121,900 af, comprised of 98,100 af for agricultural irrigation and 23,800 af for municipal supply. Groundwater was the primary water supply, 114,050 af, to meet most of the total water demand; the balance of total water requirements was met by 7,850 af of imported water from the State Water Project.

Disposition of agricultural water supply was primarily to evapotranspiration by crops, which consumptively used about 80,000 af of the applied water; the balance of applied irrigation, nearly 18,00 af, returned to the groundwater basin as deep percolation of applied water not consumptively used by crops. Slightly less than one-half of the municipal supply, about 11,400 af, was consumptively used in the service areas of municipal purveyors. The remainder of total municipal supply, about 12,400 af, was processed at waste water treatment plants. About 9,000 af of treated effluent from those plants are estimated to have returned to the groundwater basin, primarily by surface spreading in infiltration basins and much less through spray irrigation. About 1,200 af are estimated to have been consumed through waste water treatment processes and about 100 af were disposed through deep well injection of waste brine product and for industrial use.

A tabular summary of total water requirements, water supplies, and disposition of water supplies for the SMVMA in 2009 is delineated in Table 5.1. The components of total water requirements remained consistent with volumes and patterns of demand over the last decade.

**Table 5.1-1**  
**Summary of 2009 Water Requirements, Water Supplies and Disposition**  
**Santa Maria Valley Management Area**  
**(in acre-feet)**

Water Requirements			Water Supplies			
Agricultural	Municipal	Total	Groundwater	Imported SWP Water	Total	
98,100	23,800	121,900	114,050	7,850	121,900	
Disposition						
Agriculture		Municipal				
Consumption	Return Flows	Consumption	Waste Water			
80,200	17,900	11,400	12,400			
			Tmt. Plant Consump.	Return Flows	Disposal To Irrig.	Injection/ Industrial
			1,240	9,050	2,010	100

Reported total irrigated acreage and crop distribution in 2009, about 51,400 acres devoted primarily to truck crops, and the associated applied water requirement, about 98,100 af, are consistent with the generally constant trend in agricultural land use and water requirements in the SMVMA over the last decade. Total irrigated cropland has been generally stable between 48,000 and 52,000 acres, with increased truck crop acreage and a decline in pasture, field, and citrus acreages. The associated applied water requirements had also been generally stable, in the broad range of 80,000 to 120,000 afy, where that range is largely driven by year-to-year weather conditions. The sole source of water supply for agricultural irrigation continues to be groundwater, so groundwater pumping for agricultural purposes was an estimated 98,100 af in 2009.

Recorded municipal water supplies in 2009 were 15,950 af of groundwater and 7,850 af of imported SWP water to meet a total municipal water requirement of 23,800 af; total municipal demand in 2009 was consistent with the long-term trend of gradually increasing municipal water demand apparent over the last decade, although slightly less than the peak historical municipal demand of 25,600 af in 2007. Groundwater pumping for municipal water supply in 2009 was one-third less than a decade ago, when groundwater pumping met the entire municipal water requirement of approximately 23,000 afy. During several of the intervening years (1998 through 2006), groundwater pumping was less than one half that amount. The decrease in municipal groundwater pumping has resulted from the importation and use of SWP water, which began in 1997. In 2009, those importations slightly exceeded the minimum annual amounts specified in the Stipulation for the City of Santa Maria and GSWC; the City of Guadalupe used about 145 af less than the minimum specified in the Stipulation.

With regard to provisions in the Stipulation for each of the municipal purveyors in the SMVMA to have rights to return flows that derive from their respective importations of SWP water, the existing systems for waste water treatment and disposal are such that only the City of Santa Maria actually discharges in a manner that supports the 65 percent return flow fraction in the Stipulation for the City. Waste water treatment and disposal of waters supplied by GSWC and the City of Guadalupe are such that they do not support the 45 percent return flow fraction for either of those purveyors. Until there is some substantial change in either of their respective treatment and disposal schemes, the Stipulation provision that entitles recovery of 45 percent of SWP water to both purveyors should be decreased to a maximum of 20 percent for both GSWC and Guadalupe.

Despite sedimentation that has now filled the former dead pool storage below the conservation pool in Twitchell Reservoir, operation of the Reservoir has, overall, continued to provide conservation of runoff for subsequent release for groundwater recharge in the SMVMA. Precipitation in 2009 was below the long-term average, continuing the period of drier-than-average climatic conditions in the area since 2001. As a result, there were no releases from Twitchell Reservoir in 2009, while streamflows in the Sisquoc River and Orcutt Creek, which are uncontrolled, were well below average. Consistent with historical experience and as expected through dry periods with little or no Twitchell storage and releases for groundwater recharge, groundwater levels generally declined in 2009. However, as noted above, groundwater levels remained within historical fluctuating ranges and did not decline to the point of beginning to define any type of critical water shortage.

General mineral and nitrate concentrations in the Sisquoc River and Orcutt Creek, the only streams in the SMVMA for which water quality data were available, and at the Green Canyon sampling point were within historical ranges. As such, Orcutt Creek and Green Canyon quality remained degraded with highly elevated concentrations of dissolved salts and nitrate.

Finally, the Stipulation delineates four specific criteria that, when all are met in any given year, define a condition of severe water shortage in the SMVMA; those four criteria are:

- chronic decline in groundwater levels (over period of not less than 5 years);
- groundwater level decline not caused by drought;
- material increase in groundwater use during the five year period; and
- groundwater levels below lowest recorded levels.

While groundwater levels in the SMVMA have gradually declined since about 2000, including between 2008 and 2009, groundwater levels observed in 2009 remained above lowest recorded levels in the SMVMA. Recognizing that generally drier conditions have prevailed over that time, notably resulting in no releases from Twitchell Reservoir in 2002-2004, 2007, and 2009, the recent gradual decline in groundwater levels is most likely attributable to climatological conditions. The total groundwater use in 2009, about 114,000 af, was comparable to use during the last decade, which has ranged between 90,000 and 135,000 afy. In summary, conditions in the SMVMA do not satisfy any of the criteria delineated in the Stipulation to define a severe

water shortage; as a result, it is concluded that there is no severe water shortage in the SMVMA as of 2009.

## **5.2 Recommendations**

In light of basin conditions related to water requirements and supplies, and related to local water resources, there are no major needs to change things related to those conditions. However, there are a few items that warrant discussion, and they are embedded in these recommendations. Such as data not currently being collected impede various aspects of reporting on conditions in the SMVMA, recommendations regarding collection of those data are included in the monitoring program prepared for the TMA in 2009 and revised in 2010 (Appendix A of this report). While implementation of the entire monitoring program will logically be over a period of time, as recognized in the monitoring program itself, progress toward implementation will allow progressively expanded reporting on conditions in the SMVMA in future annual reports. Examples of continued or expanded monitoring include:

- measurement of groundwater levels on a semi-annual basis in all designated wells;
- groundwater quality sample collection and analysis for general minerals, nitrate, and bromide on a biennial basis in all designated water quality wells;
- installation of shallow and deep monitoring wells north of the City of Santa Maria for inclusion in the monitoring program well networks;
- reactivation of stream gauges, in order of priority: 1) Cuyama River (below Twitchell) and Santa Maria River (near Guadalupe), 2) Sisquoc River tributaries (Foxen, La Brea, and Tepusquet Creeks), and 3) Santa Maria River tributaries (Nipomo and Suey Creeks);
- reporting of stream stage with discharge;
- collection and analysis of surface water quality samples from Twitchell Reservoir and streams on a biennial basis; and
- reestablishment of a CIMIS climate station on the Valley floor for the collection of reference evapotranspiration data.

Regarding the latter point, as briefly noted in Section 2.4.2, the TMA initiated efforts in 2009 to select a location for this CIMIS station, and to coordinate with DWR regarding the applicability of the site, as well as installation costs. It is recommended that the effort to install and activate that new CIMIS station be completed.

One key aspect of continued or expanded monitoring is the interpretation of groundwater levels in the vicinity of the boundary between the SMVMA and the NMMA. Comments on the initial (2008) annual reports for both management areas called attention to differing interpretations and associated indications of the existence or absence of subsurface flow from the SMVMA toward

the NMMA. As a result, development of a locally expanded monitoring network and increased frequency (monthly) of monitoring near that boundary were recommended to the TMA, with the intent that those efforts maximize the use of existing monitored wells and be coordinated with the NMMA. This 2009 annual report on the SMVMA also expanded the interpretation of spring groundwater elevations near that boundary, within the limits of existing monitoring data. Ultimately, however, while it appears that the interpretation of groundwater conditions near the boundary is more important for the NMMA and its overall water budget accounting, it is recommended that the TMA coordinate with the NMMA Technical Group to implement a locally expanded monitoring effort to allow improved interpretation of groundwater levels and flow directions in that boundary area.

Beyond components of the overall monitoring program, the most notable recommendation for additional investigation is that the City of Santa Maria continue with its efforts to secure additional SWP entitlement, in a timely manner consistent with progress as it occurs in its Water Sales Agreement with the Nipomo CSD, in order to be able to comply with the provisions of the Stipulation regarding importation and use of SWP water in the SMVMA if the Water Sales Agreement becomes operational. On the same matter, Santa Maria should complete its analysis of the availability of surplus water in the SMVMA (surplus to all the needs in the SMVMA) whereby some can be exported beyond the SMVMA. Coincident with the preceding, Santa Maria should also complete its analysis of the sources, pumping locations, and potential impacts of groundwater pumping that would be exported beyond the SMVMA.

Finally, four points not otherwise included in the monitoring program but useful in future analysis and reporting on the SMVMA include:

- surveying of wellhead reference point elevations at all wells utilized for groundwater level monitoring;
- improved coordination between agencies to monitor groundwater levels within consistent focused periods of time across all three management areas in the Santa Maria groundwater basin (SMVMA, NMMA, and NCMA), specifically early spring (pre-irrigation season) and late fall (post-irrigation season);
- definition of municipal water supply well locations (GSWC, Guadalupe) and well completion information (GSWC), for wells with historical groundwater level, quality, and pumpage data;
- improved conveyance of municipal water supply well groundwater level, quality, and pumpage data, and SWP water delivery data, i.e. regular data transmittal through the year as data is collected; and
- development of more detailed crop water use data for principal crops and crop categories.

## **Appendix A**

### **SMVMA Monitoring Program**

# **Monitoring Program for the Santa Maria Valley Management Area**

*prepared for*

**Superior Court of California, County of Santa Clara  
*and*  
Twitchell Management Authority**

***Luhdorff and Scalmanini  
Consulting Engineers***

**October 2008  
(revised April 2010)**

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## **I. INTRODUCTION**

The terms and conditions of a Stipulation in the Santa Maria Valley Groundwater Basin Litigation passed down by the Superior Court of the State of California, County of Santa Clara, on June 30, 2005, are intended to “impose a physical solution establishing a legal and practical means for ensuring the Basin’s long-term sustainability.” Under the Stipulation, the groundwater, imported and developed water, and storage space of the Basin are to be managed in three management areas, including one for the Santa Maria Valley (SMVMA) (Figure 1). The management area is approximately 175 square miles in size encompassing the Santa Maria and Sisquoc Valleys, extending north to the Nipomo Mesa, east to the cliffs above the Santa Maria River and terraces along the Sisquoc River, south to the Casmalia and Solomon Hills, and west to the coast.

According to the Stipulation, a monitoring program is to be established for each of the three management areas to collect and analyze data regarding water supply and demand such that the following objectives are met:

- 1) assessment of groundwater conditions, both levels and quality;
- 2) determination of land use, water requirements, and water supply; and
- 3) accounting of amounts and methods of disposition of water utilized.

This monitoring program has been prepared to meet these objectives in the SMVMA. Also in accordance with the Stipulation, it is expected that the monitoring results will be utilized for preparation of annual reports on the SMVMA, including an assessment of whether conditions of severe water shortage are present. The monitoring program for the SMVMA, with minor revisions from October 2008, is described by individual element in the following section.

Among other components, the monitoring program includes networks of historically monitored wells, stream gauges, and climatic stations. These monitoring points were selected based on publicly available information about their locations, characteristics, and historical data records with the intent of continuing those records as much as possible. It is recognized that, as implementation of the program proceeds, the inclusion of some network wells may be determined to be impractical or impossible due to problems of access or abandonment. Further, the reestablishment of inactive (or installation of new) wells, stream gauges and climatic stations will depend on interagency coordination, permitting procedures, and budgetary constraints. Thus, it is anticipated that the overall monitoring program will be incrementally implemented as practicalities like those mentioned above dictate. Similarly, it is expected that, with time, the program will undergo modification in response to various factors (e.g. replacing network wells abandoned in the future, revising well classifications by aquifer depth zone), while maintaining the overall goal of facilitating interpretation and reporting on water requirements, water supplies, and the state of groundwater conditions in the SMVMA.

## II. MONITORING PROGRAM

As a basis for designing the monitoring program, all pertinent historical data on the geology and water resources of the SMVMA were updated and compiled into a Geographic Information System (GIS). The data include the following:

- well location, reference point elevation (RPE), depth, and construction information;
- surface water gauge locations and characteristics;
- precipitation gauge and weather station locations and characteristics;
- groundwater levels and quality;
- Twitchell Reservoir releases, stream discharge and quality;
- precipitation and reference evapotranspiration (ET<sub>o</sub>) records;
- topographic, cultural, soils, and land use maps;
- geologic map and geologic structure contours;
- water purveyor wellfield areas;
- wastewater treatment plant (WWTP) locations.

The GIS was first utilized to define aquifer depth zones for groundwater monitoring purposes. In the central and major portion of the SMVMA, there is a shallow zone comprised of the Quaternary Alluvium, Orcutt formation, and uppermost Paso Robles formation and a deep zone comprised of the remaining Paso Robles formation and Careaga Sand. In the eastern portion of the SMVMA where these formations are much thinner and comprised of coarser materials, particularly in the Sisquoc Valley, the aquifer system is essentially uniform without distinct aquifer depth zones. In the coastal area where the surficial deposits (upper members of Quaternary Alluvium and Orcutt formation) are extremely fine-grained, the underlying formations (lower members of Quaternary Alluvium and Orcutt formation, Paso Robles formation, and Careaga Sand) comprise a confined aquifer.

The GIS was then used to classify a majority of wells into the shallow or deep aquifer zones based on well depth and completion information, although a number of wells could not be classified because this information is either unavailable or indicates completion across both the shallow and deep zones. An evaluation was made of the distribution of wells across the SMVMA completed in each depth zone. Wells actively or historically monitored for water levels and quality by the U.S. Geological Survey (USGS) and its cooperating local agencies<sup>1</sup> (Agencies) were identified, and an evaluation was made of the adequacy of coverage of the SMVMA to meet the objective in the Stipulation of assessing groundwater conditions.

It was determined that the wells actively monitored by the Agencies for groundwater levels provide extensive but somewhat incomplete coverage of the SMVMA, with areas

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<sup>1</sup> Cooperating local agencies include Santa Barbara County, San Luis Obispo County, and the Santa Maria Valley Water Conservation District (SMVWCD).

left unmonitored in both aquifer zones. Based on this assessment, the groundwater monitoring program for the SMVMA was designed to first incorporate all of the actively monitored wells (denoted herein as “active wells”). Thus, those wells will continue to be monitored for water levels by the Agencies with the resulting data used toward assessing groundwater conditions in the SMVMA.

Secondly, in order to fill the gaps in coverage around the active wells, the groundwater monitoring program includes a number of additional wells historically monitored by the Agencies that are no longer monitored (denoted herein as “inactive wells”, but intended to be actively monitored as part of this program). Thus, water level monitoring in these wells will need to be restarted in collaboration with the Agencies. This will provide the additional benefit of bringing forward the historical water level records of the inactive wells, some of which begin in the 1920s.

Regarding the active and inactive wells, those that could not be classified by aquifer depth zone (noted as “unclassified wells”) are nonetheless included in the monitoring program because they contribute to completing well coverage of the SMVMA. The main revision to the October 2008 monitoring program is classification of previously unclassified wells based on additional well information, water level, and water quality data collected since the monitoring program was implemented.

Third, the groundwater monitoring program includes new monitoring wells to be installed in both the shallow and deep aquifer zones in an area north of downtown Santa Maria to fill a gap in coverage by existing wells. Arrangements will need to be made for the well installations, and monitoring will need to be implemented in collaboration with the Agencies.

This groundwater monitoring program designates a subset of wells for the purpose of monitoring groundwater quality, with well selection based on evaluation of well depths, completion information, and historical water level and quality data. It was determined that, of those wells actively monitored for groundwater levels, very few are actively monitored for groundwater quality. The subset of groundwater quality wells under this monitoring program incorporates the few active water quality wells, which will continue to be monitored by the Agencies. In addition, the subset includes wells historically (but no longer) monitored for water quality and wells historically monitored for water levels (but never for water quality) by the Agencies. Thus, water quality monitoring in these wells will need to be restarted or implemented in collaboration with the Agencies. Lastly, in order to fill a gap in coverage by existing wells, the new monitoring well to be installed in the deep aquifer zone north of downtown Santa Maria is included in the subset of groundwater quality wells.

Thus, the groundwater monitoring program designates two well networks, one each for the shallow and deep aquifer zones, primarily comprised of wells that are actively monitored. The networks include additional wells that are currently inactive (monitoring to be restarted) and some new wells (installation and monitoring to be implemented). All

network wells are to be monitored for groundwater levels, with a subset of those wells to be monitored for groundwater quality, as described in detail in the subsection below.

Another use of the GIS was for the evaluation of actively and historically monitored surface water and climatic gauges by their location and period of record, specifically for Twitchell Reservoir releases, stream discharge, precipitation, and reference evapotranspiration (ET<sub>o</sub>) data, in order to assess adequacy of coverage in the SMVMA to meet monitoring objectives in the Stipulation. In this case, it was determined that the actively monitored gauges provide a substantial but incomplete accounting of surface water resources in the SMVMA, with several streams no longer monitored and the Valley floor without any climatic gauges. The SMVMA monitoring program was designed to incorporate the active gauges and reestablish inactive gauges to provide a comprehensive record of surface water and climatic data. A revision to the October 2008 monitoring program is the addition of a surface water sampling point on Green Canyon drainage, currently monitored for flow and quality.

A description of the groundwater, surface water, and climatic monitoring included in the SMVMA monitoring program is provided in the following subsection. Three monitoring program elements designate the data collection to be conducted across the area including 1) hydrologic data with which groundwater conditions, surface water conditions, and agricultural water requirements may be assessed, 2) water requirements and supply data for agricultural irrigation and municipal use; and 3) water disposition data for agricultural and municipal land uses.

## **2.1 Hydrologic Data**

Hydrologic data include groundwater levels and quality from two well networks, one each for the shallow and deep aquifer zones. Also to be collected are data on Twitchell Reservoir releases and stream stage, discharge, and quality, from a designated set of surface water monitoring locations. The data also include precipitation and ET<sub>o</sub> data, which will be used to estimate agricultural water use in the SMVMA.

### **2.1.1 Groundwater Levels and Quality**

#### *Well Networks*

Evaluation of historical groundwater level and quality data from the SMVMA indicates that groundwater conditions differ across the area and with depth; accordingly and as described above, the groundwater monitoring program designates both shallow and deep well networks. The monitoring networks include along the coast three sets of existing grouped monitoring wells that are completed at varying depths for the purpose of detecting conditions of saltwater intrusion. However, the networks lack coverage inland in an area north of downtown Santa Maria adjacent to the Santa Maria River, necessitating the installation of at least one shallow and one deep well.

The monitoring networks are primarily comprised of wells actively monitored by the USGS and cooperating agencies (Agencies). The networks include additional wells that are currently inactive (monitoring to be restarted) and some new wells (installation and monitoring to be implemented). The shallow well network consists of 68 wells for groundwater level monitoring with a subset of 37 wells for water quality monitoring (Table 1a and Figure 2a), including one new well to be installed north of Santa Maria and monitored for shallow groundwater levels. The deep well network consists of 52 wells for water level monitoring with a subset of 38 water quality wells (Table 1b and Figure 2b), including one new well to be monitored for groundwater levels and quality in the deep zone. In addition, 29 unclassified wells are included for groundwater level monitoring with a subset of 4 water quality wells (Table 1c); they are shown on both the shallow and deep well network maps (see Figures 2a/2b) to illustrate the areal distribution of network wells across the SMVMA.

To augment the monitoring program results, data from water supply well monitoring conducted by the Cities of Santa Maria and Guadalupe and by the Golden State Water Company to meet California Dept. of Health Services requirements will be compiled. Likewise, data from sanitation facility well monitoring conducted under their respective permit conditions will augment the monitoring program results. Finally, data collected from wells in the Nipomo Mesa Management Area (NMMA) monitoring program (not part of the SMVMA well networks) will be compiled in order to assess groundwater conditions in the area along the northern boundary of the SMVMA.

Overall, the groundwater monitoring networks for the SMVMA include:

- 149 wells for water levels (68 shallow, 52 deep, 29 unclassified), of which:
  - 91 of the 149 wells are active (42 shallow, 28 deep, 21 unclassified) and will continue to be monitored for water levels by the Agencies,
  - 56 wells are inactive (25 shallow, 23 deep, 8 unclassified) and will need to have water level monitoring restarted in collaboration with the Agencies,
  - 2 wells are new (1 shallow and 1 deep) and will need to have arrangements made for their installation and water level monitoring implemented in collaboration with the Agencies, and
- 79 of the 149 wells are also for water quality (37 shallow, 38 deep, 4 unclassified), of which:
  - 14 wells are active (4 shallow, 9 deep, 1 unclassified), and will continue to be monitored for water quality by the Agencies,
  - 34 wells are inactive (17 shallow, 14 deep, 3 unclassified), and will need to have water quality monitoring restarted in collaboration with the Agencies,
  - 30 wells not monitored (16 shallow, 14 deep), and will need to have water quality monitoring implemented in collaboration with the Agencies,
  - 1 well is new (deep) and will need to have water quality monitoring implemented in collaboration with the Agencies.

The areal coverage of wells for groundwater levels and quality is comparable to previous groundwater resources investigations periodically conducted by the USGS. The groundwater monitoring networks are comprehensive and conservative in that they provide areal coverage of the SMVMA in two depth zones, including focused monitoring for potential saltwater intrusion along the coast. Upon implementation of the groundwater monitoring program and analysis of the initial groundwater level and quality results, an assessment will be made of whether the well network requires modification, e.g., more or less wells, while ensuring the monitoring objectives of the Stipulation are met.

### *Monitoring Specifications*

Under the monitoring program, groundwater level measurements in each network well will be made from an established wellhead reference point to an accuracy of 0.01 foot. Groundwater quality monitoring will include general mineral constituents to facilitate description of the general groundwater chemistry throughout the SMVMA. In addition, specific inorganic constituents are included to assess effects of historical and current land uses and groundwater quality relative to potential saltwater intrusion along the coast. The initial monitoring constituents for both the shallow and deep well networks are:

General Minerals (*including Total Dissolved Solids (TDS), Electrical Conductivity (EC), pH, sodium (Na), calcium (Ca), magnesium (Mg), potassium (K), chloride (Cl), sulfate (SO<sub>4</sub>), and bicarbonate (HCO<sub>3</sub>)*)  
Nitrate as Nitrate (NO<sub>3</sub>-NO<sub>3</sub>)  
Bromide (Br)

All sample collection, preservation, and transport will be according to accepted EPA protocol. Sample analyses are to be conducted by laboratories certified by the State of California utilizing standard EPA methodologies. Analyses for NO<sub>3</sub>-NO<sub>3</sub> and Br are to achieve minimum reporting limits of 0.10 mg/l.

The great majority of existing wells in the SMVMA have reported reference point elevations (RPEs) that appear to have been derived from USGS 7-1/2' topographic quadrangles, with variable levels of accuracy. Therefore, a wellhead survey will need to be conducted establishing the RPE for each network well to an accuracy of less than one foot, preferably to 0.01 foot, in order to allow accurate assessment of groundwater conditions throughout the SMVMA. The wellhead survey would most easily be completed using survey-grade global positioning system (GPS) equipment. Upon evaluation of the initial monitoring results, an assessment will be made regarding the need to verify RPEs or modify the set of water quality constituents and/or reporting limits.

### *Monitoring Frequency*

Historical groundwater level data from the SMVMA indicate that water levels typically peak between January and April and decline to the seasonal low between July and October. Accordingly, the initial frequency of groundwater level monitoring is semiannually during the spring and fall, as has typically been the practice of the USGS and some cooperating agencies.

Review of historical groundwater quality data indicates that some quality constituents, such as sulfate, nitrate, and associated TDS and EC values, can change substantially over two to three years. As a result, the initial frequency of groundwater quality sampling is every two years, and preferably during the summer to allow any necessary followup sampling. Coastal monitoring wells will be sampled twice annually, during spring and fall, to evaluate seasonal water quality changes with the seasonal fluctuation in Valley groundwater levels.

The annual groundwater level and quality monitoring results from purveyors and sanitation facility wells will be compiled with the results from the SMVMA monitoring program, at which time an assessment will be made regarding the need for additional monitoring of selected purveyor/facility wells. Regarding the SMVMA well network, following evaluation of the initial groundwater level and quality results, an assessment will be made whether monitoring frequencies need to be modified.

### *Data Sources, Agency Coordination, and Plan Implementation*

Implementation of the groundwater monitoring program will necessitate completing several tasks augmenting the groundwater monitoring currently conducted by the Agencies. It is recommended that program implementation proceed through the following tasks in order:

- 1) Coordination with the Agencies (primarily the USGS) and landowners to assess site conditions at each designated program well, including field determinations of well and wellhead conditions and access (as needed), with the objective of establishing final well networks (shallow and deep) for the ongoing measurement of water levels and collection of water quality samples;
- 2) Installation of monitoring wells in those areas lacking coverage by the established networks;
- 3) Coordination with the Agencies and landowners to make arrangements for conducting groundwater level and quality monitoring, per the monitoring program, on an ongoing basis; and
- 4) Completion of a wellhead survey to record the reference point elevation and ground surface elevation at each network well.

On an annual basis, the designated groundwater monitoring activities for the SMVMA will need to be coordinated with the USGS and cooperating agencies to confirm their continued monitoring of network wells. During each year, groundwater level and quality data from the Agencies will be compiled with the SMVMA dataset, and an assessment will be made of the remaining data needs to fulfill the groundwater monitoring program. The annual agency coordination, planning of monitoring activities, data collection, and data compilation will be jointly conducted by LSCE and the TMA.

### **2.1.2 Surface Water Storage, Discharge, Stage, and Quality**

#### *Monitoring Locations*

Twitchell Reservoir stage, storage, and surface water releases are recorded on a daily basis. Also, four stream gauges in the SMVMA currently provide average daily discharge data, specifically two on the Sisquoc River (“near Sisquoc” and “near Garey”), one on the Santa Maria River (“at Suey Crossing near Santa Maria”), and one on Orcutt Creek (“near Orcutt”). Together, the reservoir release data and current stream gauge measurements account for the primary components of streamflow into the Santa Maria Valley (Figure 3).

Additional data are needed for the main streams associated with the Santa Maria Valley for the purpose of assessing surface water resources and stream/aquifer interactions in the SMVMA. The main component of streamflow into the Santa Maria Valley is not measured, specifically from the Cuyama River (inactive gauge), and streamflow from the Santa Maria Valley cannot be accounted because the gauge located on the Santa Maria River at Guadalupe is inactive. Further, for all streams in the SMVMA, stage measurements are not reported and water quality monitoring is limited to the Sisquoc River (“near Sisquoc”) and Orcutt Creek (“near Orcutt”). A sampling point on Green Canyon provides information on the flow and quality of drainage in the western Valley.

Accordingly, the surface water monitoring program specifies that reservoir stage, storage, and releases from the Twitchell Project continue to be recorded on a daily basis. The program also designates a set of stream gauges on the Sisquoc, Cuyama, and Santa Maria Rivers and Orcutt Creek for the determination of average daily stage and discharge (see Figure 3). Gauge locations will serve as water quality sampling points. Additional water quality sampling points (without gauge) are the current Green Canyon point and a new one to be located on Oso Flaco Creek.

The main surface water monitoring locations for the SMVMA include:

- Twitchell Project, which will continue to be monitored for reservoir stage, storage, and releases (with water quality monitoring to be implemented) by the SMVWCD;
- 6 stream gauges, of which:
  - 2 gauges will continue to be monitored for stream discharge and quality by the USGS:

“Sisquoc River near Sisquoc”

“Orcutt Creek near Orcutt”

2 gauges will continue to be monitored for stream discharge by the USGS (with water quality monitoring to be implemented in collaboration with the USGS):

“Sisquoc River near Garey”

“Santa Maria River at Suey Crossing near Santa Maria”

2 gauges for which stream discharge and water quality monitoring will need to be reestablished in collaboration with the USGS:

“Cuyama River below Twitchell”

“Santa Maria River at Guadalupe”; and

- Green Canyon, for which flow and quality monitoring will continue, and Oso Flaco Creek, for which water quality monitoring will need to be implemented in collaboration with the USGS.

The inactive gauges on the Cuyama River (“below Twitchell”) and Santa Maria River (“at Guadalupe”) need to be reestablished, and rating curves relating stage measurements to discharge need to be redeveloped. If possible, it would be preferable to establish an alternate location for the Cuyama River gauge closer to its confluence with the Sisquoc River. At the present time, streamflow entering the Santa Maria Valley from the Cuyama River can be estimated from Twitchell Project release data (streamflow losses occur on the Cuyama River between Twitchell Dam and its confluence with the Sisquoc River). Streamflow data from the former Cuyama River gauge facilitated better estimation of streamflow entering the Valley but did not preclude estimation errors.

Operation of the Santa Maria River gauge at Suey Crossing, located in the primary recharge area of the River, will need evaluation. Currently, stream discharge data are reported only sporadically; it appears that stage data have been collected but not yet converted to discharge pending development by the USGS of appropriate rating curves. However, data collection may be being compromised by technical problems with the gauge, in which case timely resolution of the problems or consideration of an alternate gauge location in this reach of the River would be necessary.

It should be noted that, in order to provide for the most complete assessment of surface water resources of the SMVMA, data would also be needed for its tributary streams. Streamflows into the Sisquoc Valley from La Brea Ck, Tepusquet Ck, and Foxen Canyon cannot be accounted because their respective gauges are inactive. Also, streamflows into the Santa Maria Valley from Nipomo and Suey Creeks have not been monitored (see Figure 3). Thus, stream gauges for the determination of average daily stage and discharge would need to be reestablished for La Brea, Tepusquet, and Foxen Canyon Creeks and installed on Nipomo and Suey Creeks in collaboration with the USGS.

To augment the surface water monitoring program results, water quality data from stream studies periodically conducted by the Central Coast Regional Water Quality Control Board and from sanitation facility monitoring will be compiled.

### *Monitoring Specifications*

For the Twitchell Project, reservoir stage will need to be related to storage volume. For all stream gauges, stage measurements will need to be reported relative to some known elevation datum. Under the monitoring program, initial surface water quality analyses to be performed are for the same general mineral and specific inorganic constituents as for groundwater. Reservoir and stream sample collection will be according to accepted protocol; sample preservation, transport, analyses, and reporting limits will be according to groundwater quality monitoring specifications.

### *Monitoring Frequency*

For the Twitchell Project, daily releases and reservoir stage are to be recorded. For all streams, gauge operations will provide average daily stream stage and discharge data. Water quality monitoring will be conducted on a semi-annual basis during the period of maximum winter/spring runoff and minimum summer flows to evaluate changes in surface water quality with fluctuations in stream discharge.

### *Data Sources, Agency Coordination, and Plan Implementation*

Implementation of the surface water monitoring program will necessitate completing several tasks augmenting the stream monitoring currently conducted by the USGS. It is recommended that program implementation proceed through the following tasks in order:

- 1) Coordination with the USGS to assess site suitability for stream gauges on the Cuyama River (“below Twitchell”) and Santa Maria River (“at Guadalupe”), with the objective of establishing the locations and specifications for gauge installation to conduct ongoing measurement of stream stage, discharge, and quality;
- 2) Coordination with the USGS to install stream gauges and develop rating curves for the Cuyama River (“below Twitchell”) and Santa Maria River (“at Guadalupe”) locations;
- 3) Coordination with the Agencies to make arrangements for conducting surface water monitoring, per the monitoring program, on an ongoing basis on the designated streams (USGS) and Twitchell Reservoir (SMVWCD);
- 4) Coordination with the USGS to assess site suitability for stream gauges on the tributaries La Brea, Tepusquet, Foxen Canyon, Suey, and Nipomo Creeks, with the objective of establishing the locations and specifications for gauge installation to conduct ongoing measurement of stream stage, discharge, and quality;
- 5) Coordination with the USGS to install stream gauges and develop rating curves for the La Brea, Tepusquet, Foxen Canyon, Suey, and Nipomo Creeks locations; and

6) Coordination with the Agencies to make arrangements for conducting surface water monitoring, per the monitoring program, on an ongoing basis on the designated streams and tributaries (USGS) and Twitchell Reservoir (SMVWCD).

On an annual basis, the designated surface water monitoring activities for the SMVMA will need to be coordinated with the USGS to confirm their continued operation of each monitoring program gauge. During each year, Twitchell Project data from the SMVWCD will be compiled with stream stage, discharge, and water quality data from the USGS. Annual agency coordination, planning of monitoring activities, data collection, and data compilation will be jointly conducted by LSCE and the TMA.

### **2.1.3 Precipitation and Reference Evapotranspiration (ET<sub>o</sub>)**

#### *Monitoring Locations*

There currently are three active NCDC<sup>2</sup> precipitation gauges in the SMVMA providing long-term daily precipitation data through the present, specifically at Guadalupe, the Santa Maria airport (formerly downtown), and Garey. In addition, daily precipitation is recorded at three locations surrounding the SMVMA, at the Twitchell Dam (by the SMVWCD) and two active CIMIS<sup>3</sup> weather stations near Sisquoc and on the Nipomo Mesa. Daily ET<sub>o</sub> data are also currently recorded by these two CIMIS weather stations (see Figure 3).

While there are adequate precipitation data for the SMVMA, additional ET<sub>o</sub> data are needed to provide better assessment of current and future agricultural water requirements. Specifically, CIMIS weather stations are no longer in operation on the Valley floor (three CIMIS stations once located in Santa Maria, Betteravia, and Guadalupe are now inactive). Review of historical ET<sub>o</sub> values from the active and inactive CIMIS stations indicates a moderate difference exists across the SMVMA that may limit the utility of ET<sub>o</sub> data from the active stations in estimating agricultural water requirements.

Accordingly, the monitoring program designates the set of four active precipitation gauges (NCDC and Twitchell) and two active CIMIS weather stations, with an additional CIMIS station to be reestablished on the Valley floor, for the determination of daily precipitation and ET<sub>o</sub> (see Figure 3).

The climatic monitoring stations include:

- Four precipitation gauges, which will continue to be monitored by current operators:
  - Twitchell Dam (SMVWCD)
  - Guadalupe (NCDC)

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<sup>2</sup> NCDC: National Climatic Data Center, administered by the National Oceanic and Atmospheric Administration (NOAA).

<sup>3</sup> CIMIS: California Irrigation Management Information System, administered by California Department of Water Resources (California DWR).

Santa Maria Airport (NCDC)  
Garey (NCDC)

- Three weather stations for precipitation and ETo, of which:
  - 2 CIMIS stations will continue to be monitored by California DWR:
    - ‘Sisquoc’
    - ‘Nipomo’
  - 1 CIMIS station, for which monitoring will need to be reestablished in collaboration with California DWR:
    - Santa Maria Valley floor

To provide the data for the Valley floor, the inactive CIMIS weather station at either Betteravia or Santa Maria needs to be reestablished. Should both stations be determined to be inadequate or infeasible, an alternate location in the central portion of the Valley floor will need to be determined.

#### *Monitoring Specifications and Frequency*

Precipitation gauges will continue to collect total daily precipitation data, and weather stations will report daily ETo values. Operation of the weather stations will be according to CIMIS standards to collect all data utilized in the calculation of ETo values (e.g., air temperature, relative humidity, air speed).

#### *Data Sources, Agency Coordination, and Plan Implementation*

Implementation of the climatic monitoring program will necessitate coordination with the California DWR to assess the site suitability of, as well as install and operate, a CIMIS station on the Santa Maria Valley floor. Should the inactive Betteravia and Santa Maria stations be determined inadequate or infeasible, an alternate location in the central portion of the Valley floor will need to be determined.

On an annual basis, the designated climatic monitoring activities for the SMVMA will need to be coordinated with the NCDC, California DWR, and SMVWCD to confirm their continued operation of each gauge/station. The annual coordination with these agencies and data compilation will be jointly conducted by LSCE and the TMA.

## **2.2 Water Requirements and Supply Data**

These data include agricultural land use derived from land use surveys as input to the estimation of applied agricultural water requirements and, thus, groundwater pumping (sole supply) in the SMVMA. Data also include municipal and private purveyor records of water supplies, which include groundwater and imported water that in total equal the municipal water requirements in the SMVMA.

### **2.2.1 Agricultural Land Use and Water Requirements**

Under the monitoring program, land use surveys of the SMVMA will be conducted on an annual basis from analysis and field verification of aerial photography. In the event that aerial photographs of the SMVMA are unavailable from existing agricultural service companies, arrangements for the aerial photography work will need to be made.

Survey results will be utilized to determine crop distribution and acreages, which in turn will be used in conjunction with standard crop coefficient values, ETo and precipitation data, and Valley-specific irrigation efficiency values to estimate annual applied agricultural water requirements. With groundwater serving as the sole source of water supply for agricultural irrigation in the SMVMA, the estimated applied agricultural water requirements will be considered equal to the agricultural groundwater pumping in the SMVMA.

Aerial photography arrangements and analysis, field verification, determination of crop distribution and acreages, and estimation of agricultural water requirements will be jointly conducted by LSCE and the TMA.

### **2.2.2 Municipal Water Requirements**

As part of the monitoring program, records will be compiled of groundwater pumping and imported water deliveries from the State Water Project, Central Coast Authority (SWP), to municipal and private water purveyors, including the Cities of Santa Maria and Guadalupe, and the Golden State Water Company. All data will be recorded by subsystem on a monthly basis; groundwater pumping will be by individual water supply well; and all water transfers within the SMVMA between purveyors are to be noted. Also included are data on the number of service connections, any estimates of water usage on a per capita or per connection basis, and historical and current projections of water demand.

During the first year, purveyors will also provide current service area boundaries and all available water supply well location, depth, and completion information. With groundwater pumping and imported water deliveries as the two sources of water supply for municipal water use in the SMVMA, their total will be considered equal to the municipal water requirements in the SMVMA.

During each year, water supply data from the purveyors will be compiled into the SMVMA dataset. Annual coordination with purveyors will be jointly conducted by LSCE and the TMA.

### **2.2.3 Groundwater Pumping**

The estimated groundwater pumping for agricultural irrigation will be summed with the reported pumping for municipal use in order to calculate total annual groundwater pumping in the SMVMA.

### **2.2.4 Imported Water**

Imported water data will be obtained to summarize SWP deliveries to municipal and private water purveyors, specifically the Cities of Santa Maria and Guadalupe and the Golden State Water Company. Those data will be summed to calculate total annual imported water supplies in the SMVMA.

## **2.3 Water Disposition Data**

In order to provide an accounting of amounts and methods of disposition of water utilized in the SMVMA, several data are to be reported. These include treated water volumes processed and disposed at wastewater treatment plants (WWTPs); records of any water exported from the SMVMA; and estimates of agricultural drainage disposed outside the SMVMA. “Disposition” of applied irrigation not consumptively used by crops, e.g., return flows to the aquifer system, will also be accounted.

### **2.3.1 Treated Water Discharge**

Under the monitoring program, records of influent and treated effluent volumes will be compiled for WWTPs, including the Cities of Santa Maria, Guadalupe, and Laguna Sanitation District. All data will initially be recorded on a monthly basis to assess seasonal variation in the disposition of water (e.g., percentage of water utilized that becomes WWTP influent; losses during treatment). Effluent volumes will be recorded by disposal method and location, including any reuse of recycled water.

These data will be utilized to provide an accounting of municipal water disposed in the SMVMA. During each year, water disposal data from the WWTPs will be compiled into the SMVMA dataset. Annual coordination with the WWTPs will be jointly conducted by LSCE and the TMA.

### **2.3.2 Exported Water**

As part of the monitoring program, records will be compiled of any groundwater or imported (SWP) water that is exported from the SMVMA. All data will be recorded by subsystem on a monthly basis and the receiving entities are to be noted. During each year, the data acquisition and compilation into the SMVMA dataset will be jointly conducted by LSCE and the TMA.

### **2.3.3 Agricultural Drainage and Return Flows**

Under the monitoring program, estimation will be made of water drained from agricultural fields (e.g., by tile drains) for disposal outside of the SMVMA. Finally, while not formally “monitored,” the disposition of applied irrigation will include estimates of the fate of that fraction of water not consumptively used by crops, primarily as return flow to the aquifer system.

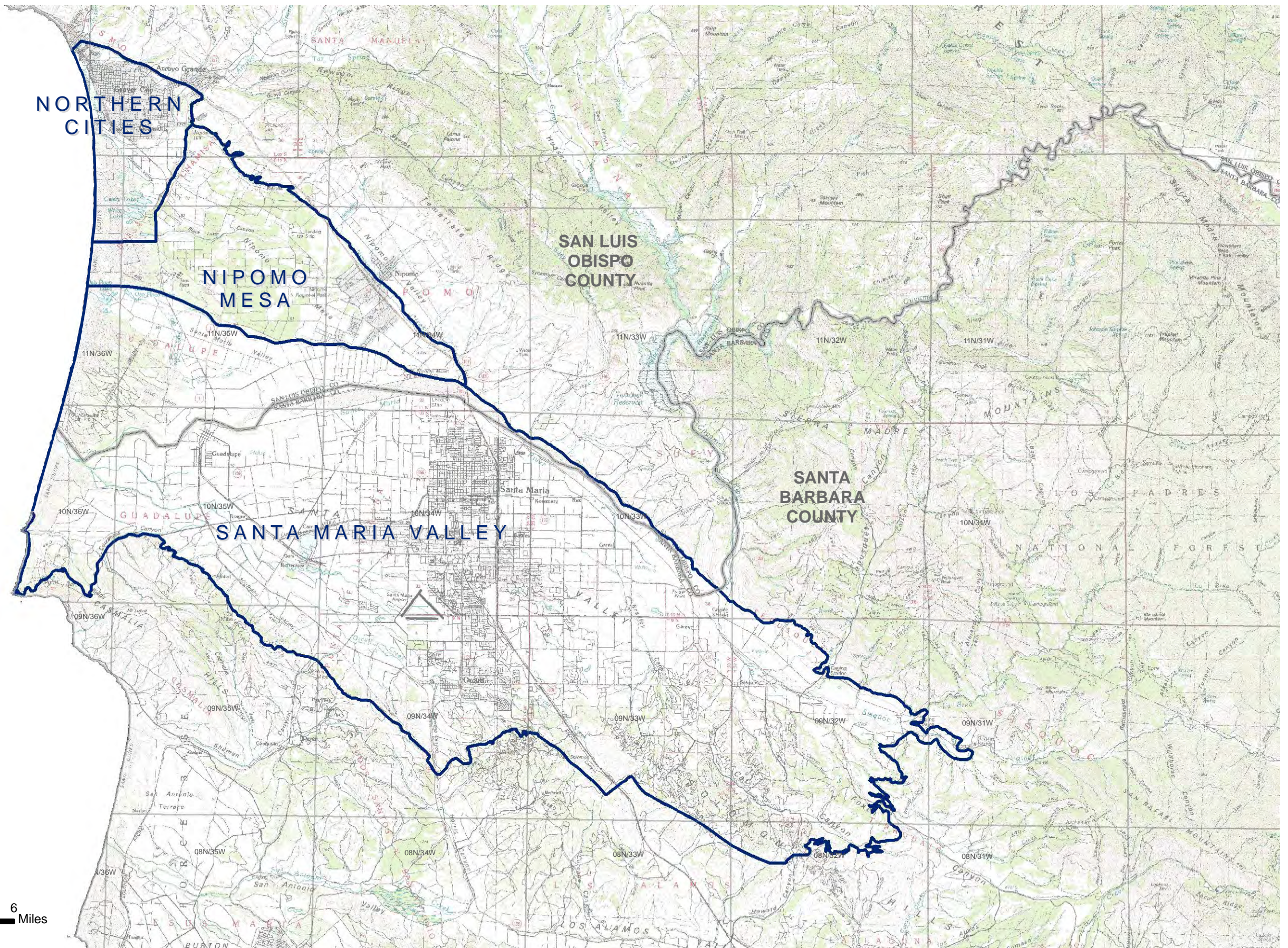
### III. SUMMARY

The monitoring program for the SMVMA includes the collection of hydrologic data, including: groundwater levels and quality; surface water storage, stream stage, discharge, and quality; and precipitation and ETo. The program provides designated shallow and deep well networks (Tables 1a/b/c and Figures 2a/b) and a surface water and climatic monitoring network (Figure 3) for collection of these data. Also specified are water requirements and supply data to be compiled for agricultural irrigation and municipal use, the disposal data for municipal water use, data on water exported from the SMVMA, and estimates of agricultural drainage and return flows.

The monitoring program components and frequencies are summarized as follows:

- groundwater levels: 149 wells (68 shallow, 52 deep, 29 unclassified), of which:
  - 91 wells are actively monitored (with monitoring to continue),
  - 56 wells are inactive (with monitoring to be reactivated), and
  - 2 wells are new (with monitoring to be implemented);semiannual frequency.
- groundwater quality: subset of 79 wells (37 shallow, 38 deep, 4 unclassified); of which:
  - 14 wells are actively monitored (with monitoring to continue),
  - 34 wells are inactive (with monitoring to be reactivated),
  - 30 wells are unmonitored and
  - 1 well is new (with monitoring to be implemented;analyzed for General Minerals (incl. NO<sub>3</sub>-NO<sub>3</sub>) and Bromide; biennial frequency.
- Twitchell Reservoir: stage, storage, and releases, which are actively monitored (with monitoring to continue), and quality, which is unmonitored (with monitoring to be implemented); stage, storage, and releases monitored daily; quality analyzed for General Minerals (incl. NO<sub>3</sub>-NO<sub>3</sub>) and Bromide on a biennial frequency.
- streams: 6 designated gauges for discharge, stage, and quality, of which:
  - 2 gauges are actively monitored for discharge and quality (to be continued),
  - 2 gauges are actively monitored for discharge (to be continued) but not monitored for water quality (to be implemented), and
  - 2 gauges are inactive (discharge and water quality monitoring to be reestablished);discharge and stage monitored daily; quality analyzed for General Minerals (incl. NO<sub>3</sub>-NO<sub>3</sub>) and Bromide on a biennial frequency.

- stream tributaries: 5 potential gauges for daily discharge and stage, that are inactive and would need to be reestablished.
- precipitation: 4 active gauges (to be continued); daily frequency.
- ETo: 3 stations, of which:
  - 2 stations are active (to be continued) and
  - 1 station is inactive (to be reestablished);daily frequency.
- land use; annually.
- municipal water requirements, supplies (groundwater pumping and SWP imported water), disposal, and exportation; monthly.
- agricultural drainage and return flow; annually.

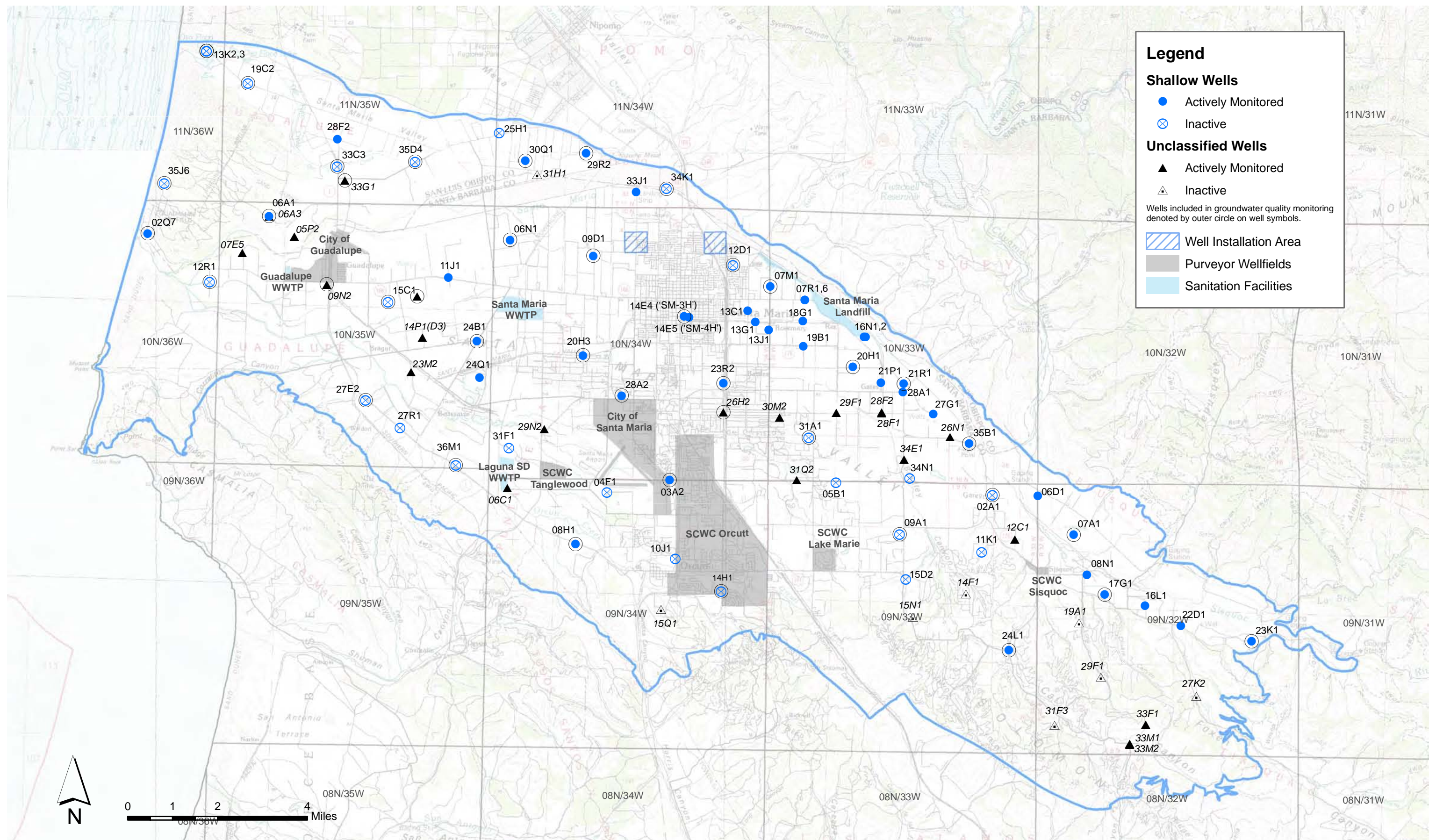


**Legend**

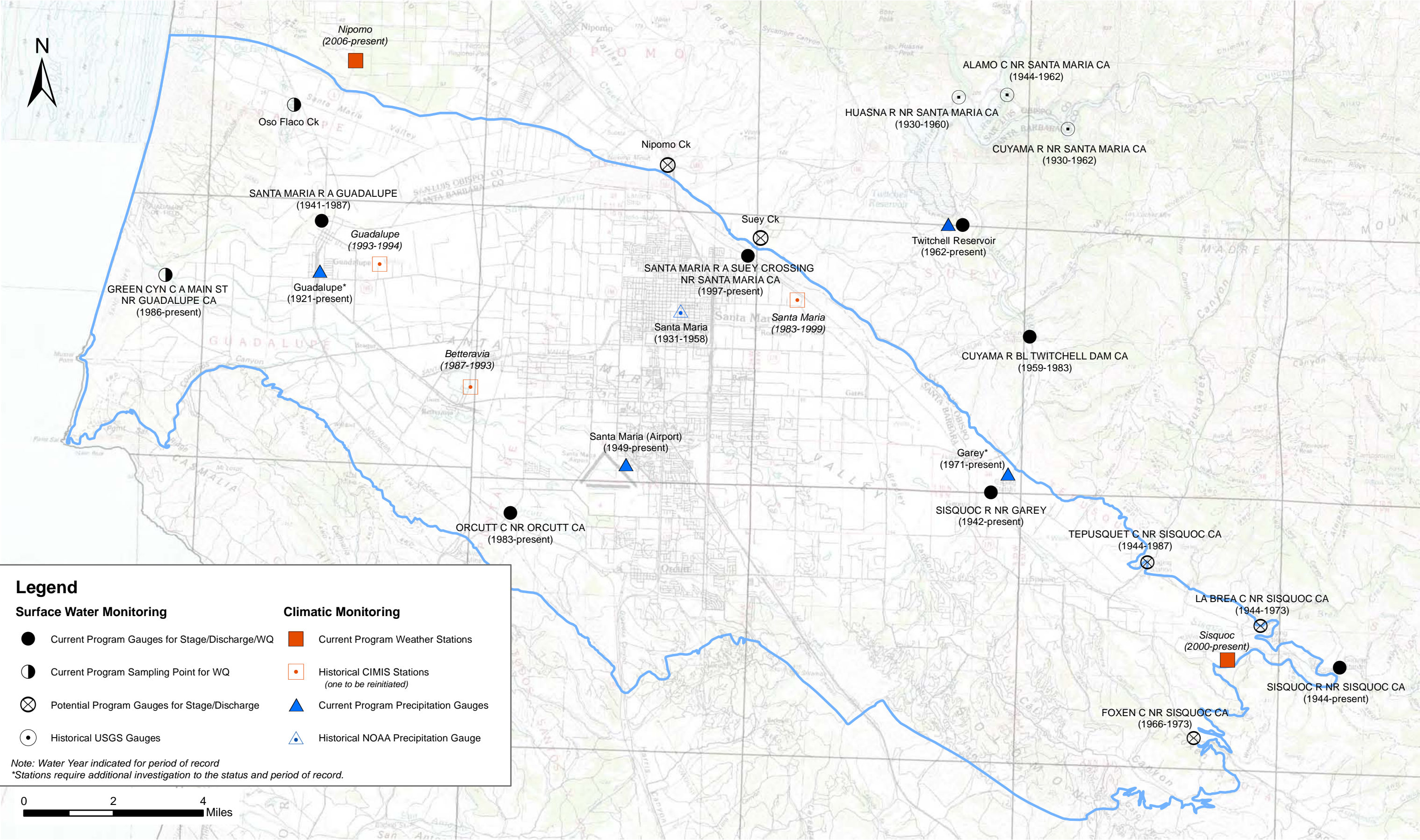
 Management Area Boundaries



0 1.5 3 6 Miles







**Figure 3**  
**Surface Water and Climatic Monitoring Network**  
**Santa Maria Valley Management Area**

**Table 1a**  
**Well Network for Monitoring Shallow Groundwater**  
**Santa Maria Valley Management Area**  
**(corresponds to Figure 2a)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>SHALLOW WELLS</b>						
9N/32W	009N032W06D001S	06D1	USGS	A/S		
	009N032W07A001S	07A1	USGS	A/S		B
	009N032W08N001S	08N1	USGS	A/S		
	009N032W16L001S	16L1	USGS	A/S		
	009N032W17G001S	17G1	USGS	A/S		B
	009N032W22D001S	22D1	USGS	A/S		
	009N032W23K001S	23K1	USGS	A/S		B
9N/33W	009N033W02A001S	02A1	TBD			B
	009N033W05B001S	05B1	TBD			
	009N033W09A001S	09A1	TBD			B
	009N033W11K001S	11K1	TBD			
	009N033W15D002S	15D2	TBD			
	009N033W24L001S	24L1	USGS	A/S		B
9N/34W	009N034W03A002S	03A2	USGS	A/S	A	B
	009N034W04F001S	04F1	TBD			
	009N034W08H001S	08H1	USGS	A/S		B
	009N034W10J001S	10J1	TBD			
	009N034W14H001S	14H1	TBD			B
10N/33W	010N033W07M001S	07M1	USGS	A/S		B
	010N033W07R001S	07R1	USGS	A/S		
	010N033W07R006S	07R6	USGS	A/S		
	010N033W16N001S	16N1	USGS	A/S		
	010N033W16N002S	16N2	USGS	A/S		
	010N033W18G001S	18G1	SMVWCD & USGS	Qtr & S		
	010N033W19B001S	19B1	SMVWCD & USGS	Qtr & S		
	010N033W20H001S	20H1	USGS	A/S	A	B
	010N033W21P001S	21P1	SMVWCD & USGS	Qtr & S		
	010N033W21R001S	21R1	USGS	A/S		B
	010N033W27G001S	27G1	SMVWCD & USGS	Qtr & S		
	010N033W28A001S	28A1	SMVWCD & USGS	Qtr & S		
	010N033W31A001S	31A1	TBD			B
	010N033W34N001S	34N1	TBD			
10N/34W	010N033W35B001S	35B1	USGS	A/S		B
	010N034W06N001S	06N1	SMVWCD & USGS	Qtr & S		B
	010N034W09D001S	09D1	SMVWCD & USGS	Qtr & S		B
	010N034W12D001S	12D1	TBD			B
	010N034W13C001S	13C1	USGS	A/S		
	010N034W13G001S	13G1	USGS	A/S		
	010N034W13J001S	13J1	USGS	A/S		
	010N034W14E004S	14E4	SMVWCD & USGS	Qtr & S	A	B
	010N034W14E005S	14E5	USGS	A/S		
	010N034W20H003S	20H3	SMVWCD & USGS	Qtr & S		B
	010N034W23R002S	23R2	USGS	A/S		B
	010N034W28A002S	28A2	SMVWCD & USGS	Qtr & S		B
	010N034W31F001S	31F1	TBD			
10N/35W	010N035W06A001S	06A1	USGS	A/S		B
	010N035W11J001S	11J1	SMVWCD & USGS	Qtr & S		
	010N035W15C001S	15C1	TBD			B
	010N035W24B001S	24B1	SMVWCD & USGS	Qtr & S		B
	010N035W24Q001S	24Q1	USGS	A/S		
	010N035W27E002S	27E2	TBD			B
	010N035W27R001S	27R1	TBD			
	010N035W36M001S	36M1	TBD			B

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; SLODPW - San Luis Obispo Department of Public Works; USGS - United States

Geological Survey; TBD - To Be Determined

**Table 1a (continued)**  
**Well Network for Monitoring Shallow Groundwater**  
**Santa Maria Valley Management Area**  
**(corresponds to Figure 2a)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>SHALLOW WELLS</b>						
10N/36W	010N036W02Q007S	02Q7	USGS	A/S	A	B
	010N036W12R001S	12R1	TBD			B
11N/34W	011N034W29R002S	29R2	SLODPW & USGS	A/S		B
	011N034W30Q001S	30Q1	SMVWCD & USGS	Qtr & S		B
	011N034W33J001S	33J1	SMVWCD & USGS	Qtr & S		
	011N034W34K001S	34K1	TBD			B
11N/35W	011N035W19C002S	19C2	TBD			B
	011N035W25H001S	25H1	TBD			
	011N035W28F002S	28F2	SLODPW & USGS	A/S		
	011N035W33C003S	33C3	TBD			B
	011N035W35D004S	35D4	TBD			B
11N/36W	011N036W13K002S	13K2	TBD			B
	011N036W13K003S	13K3	TBD			B
	011N036W35J006S	35J6	TBD			B

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; SLODPW - San Luis Obispo Department of Public Works; USGS - United States Geological Survey; TBD - To Be Determined

**Notes on Network Modification:**

**09N/32W-6D1** previously unclassified; classified as shallow well (depth unknown; compared to wells of known depth, water levels similar to those from shallow wells)

**09N/33W-12R2** removed; classified as deep well

**10N/33W-18G1** previously unclassified; classified as shallow well (depth = 422'; compared to wells of known depth, water levels similar to those from shallow wells)

**10N/35W-11J1** previously unclassified; classified as shallow well (depth = 215'; compared to wells of known depth, water levels similar to those from shallow wells)

**11N/34W-33J1** previously not included; classified as shallow well (depth = 149'; water level data recently made available by the USGS)

**11N/35W-28F2** previously not included; classified as shallow well (depth = 48'; water level data recently made available by NMMA Tech Comm.)

**11N/36W-35J5** removed; classified as deep well

**Table 1b**  
**Well Network for Monitoring Deep Groundwater**  
**Santa Maria Valley Management Area**  
**(corresponds to Figure 2b)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>DEEP WELLS</b>						
9N/33W	009N033W02A007S	02A7	SMVWCD & USGS	Qtr & S	A	B
	009N033W02F001S	02F1	TBD			
	009N033W05A001S	05A1	USGS	A/S		
	009N033W06G001S	06G1	USGS	A/S		B
	009N033W08P001S	08P1	TBD			
	009N033W12R002S	12R2	SMVWCD & USGS	Qtr & S		
9N/34W	009N033W18R001S	18R1	TBD			B
	009N034W03F001S	03F1	USGS	A/S		B
	009N034W04N001S	04N1	TBD			
	009N034W09R001S	09R1	USGS	A/S		B
10N/33W	009N034W13B006S	13B6	TBD			B
	010N033W19K001S	19K1	USGS	A/S		B
10N/34W	010N033W30G001S	30G1	SMVWCD & USGS	Qtr & S	A	B
	010N034W07E004S	07E4	TBD			B
	010N034W12P002S	12P2	TBD			B
	010N034W13H001S	13H1	USGS	A/S		
	010N034W14D001S	14D1	TBD			
	010N034W16K001S	16K1	TBD			B
	010N034W24K001S	24K1	SMVWCD & USGS	Qtr & S		
	010N034W24K003S	24K3	SMVWCD & USGS	Qtr & S		B
	010N034W31J001S	31J1	TBD			B
	010N034W34G002S	34G2	SMVWCD & USGS	Qtr & S		
10N/35W	010N035W07F001S	07F1	TBD			B
	010N035W09F001S	09F1	USGS	A/S		
	010N035W11E004S	11E4	SMVWCD & USGS	Qtr & S		B
	010N035W18F002S	18F2	USGS	A/S		
	010N035W18R001S	18R1	TBD			B
	010N035W21B001S	21B1	SMVWCD & USGS	Qtr & S		B
	010N035W25F001S	25F1	TBD			
10N/36W	010N035W35J002S	35J2	USGS	A/S		B
	010N036W02Q001S	02Q1	USGS	A/S	A	B
	010N036W02Q002S	02Q2	TBD			B
	010N036W02Q003S	02Q3	USGS	A/S	A	B
	010N036W02Q004S	02Q4	USGS	A/S	A	B
	010N036W02Q005S	02Q5	TBD			B
	010N036W02Q006S	02Q6	TBD			B
	010N036W12P001S	12P1	USGS	A/S		B
11N/35W	010N036W13R002S	13R2	TBD			B
	011N035W19E002S	19E2	TBD			B
	011N035W20E001S	20E1	SMVWCD & USGS	Qtr & S		
	011N035W25F003S	25F3	SMVWCD & USGS	Qtr & S		B
	011N035W26K002S	26K2	TBD			B
	011N035W28M001S	28M1	SMVWCD & USGS	Qtr & S		
11N/36W	011N035W29R001S	29R1	TBD			B
	011N036W13K004S	13K4	TBD			B
	011N036W13K005S	13K5	TBD			B
	011N036W13K006S	13K6	TBD			B
	011N036W35J002S	35J2	USGS	A/S	A	B
	011N036W35J003S	35J3	USGS	A/S	A	B
	011N036W35J004S	35J4	USGS	A/S	A	B
	011N036W35J005S	35J5	USGS	A/S	A	B

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; USGS - United States Geological Survey; TBD - To Be Determined

**Notes on Network Modification:**

**09N/33W-2A7** previously not included; classified as deep well (depth = 512'; water level data recently made available by the USGS)

**09N/33W-12R2** previously classified as shallow well; classified as deep well (depth = 640'; compared to wells of known depth, water levels similar to those from deep wells)

**10N/35W-9F1** previously unclassified; classified as deep well (depth = 240'; compared to wells of known depth, water levels similar to those from deep wells)

**10N/35W-18F2** previously unclassified; classified as deep well (depth = 251'; compared to wells of known depth, water levels similar to those from deep wells)

**10N/35W-21B1** previously unclassified; classified as deep well (depth = 300'; compared to wells of known depth, water levels similar to those from deep wells)

**11N/35W-20E1** previously unclassified; classified as deep well (depth = 444'; compared to wells of known depth, water levels similar to those from deep wells)

**11N/35W-25F3** previously unclassified; classified as deep well (depth unknown; compared to wells of known depth, water levels similar to those from deep wells)

**11N/35W-28M1** previously unclassified; classified as deep well (depth = 376'; compared to wells of known depth, water levels similar to those from deep wells)

**11N/36W-35J5** previously classified as shallow well; classified as deep well (depth = 135'; compared to wells of known depth, water levels and quality similar to those from deep coastal network wells)

**Table 1c**  
**Unclassified Wells for Groundwater Monitoring**  
**Santa Maria Valley Management Area**  
**(shown on Figures 2a and 2b)**

Township/ Range	State Well Number	Well Map ID	Monitoring Agency	Actively Monitored for Water Levels	Actively Monitored for Water Quality	To Be Sampled for Water Quality
<b>UNCLASSIFIED WELLS</b>						
9N/32W	009N032W19A001S	19A1	TBD			
	009N032W27K002S	27K2	TBD			
	009N032W29F001S	29F1	TBD			
	009N032W31F003S	31F3	TBD			
	009N032W33F001S	33F1	USGS	A/S		
	009N032W33M001S	33M1	USGS	A/S		
9N/33W	009N032W33M002S	33M2	USGS	A/S		
	009N033W12C001S	12C1	USGS	A/S		
	009N033W14F001S	14F1	TBD			
9N/34W	009N033W15N001S	15N1	TBD			
	009N034W06C001S	06C1	USGS	A/S		
10N/33W	009N034W15Q001S	15Q1	TBD			
	010N033W26N001S	26N1	USGS	A/S		
	010N033W28F001S	28F1	USGS	A/S		
	010N033W28F002S	28F2	USGS	A/S		
	010N033W29F001S	29F1	USGS	A/S		
	010N033W30M002S	30M2	USGS	A/S		
	010N033W31Q002S	31Q2	USGS	A/S		
	010N033W34E001S	34E1	USGS	A/S		
10N/34W	010N034W26H002S	26H2	USGS	A/S		B
	010N034W29N002S	29N2	USGS	A/S		
10N/35W	010N035W05P002S	05P2	USGS	A/S		
	010N035W06A003S	06A3	USGS	A/S		
	010N035W07E005S	07E5	USGS	A/S		
	010N035W09N002S	09N2	USGS	A/S		B
	010N035W14P001S	14P1 (D3) <sup>1</sup>	USGS	A/S	(A)	(A)
	010N035W23M002S	23M2	USGS	A/S		
11N/34W	011N034W31H001S	31H1	TBD			
11N/35W	011N035W33G001S	33G1	SMVWCD & USGS	Qtr & S		B

<sup>1</sup>14P1 actively monitored for levels but not quality. 14D3 actively monitored for quality but not levels.

Frequency Abbreviation: A/S - Annual/Semiannual; Qtr & S - Quarter & Semiannual; A - Annual; B - Biennial

Agency Abbreviation: SMVWCD - Santa Maria Valley Water Conservation District; USGS - United States Geological Survey; TBD - To Be Determined

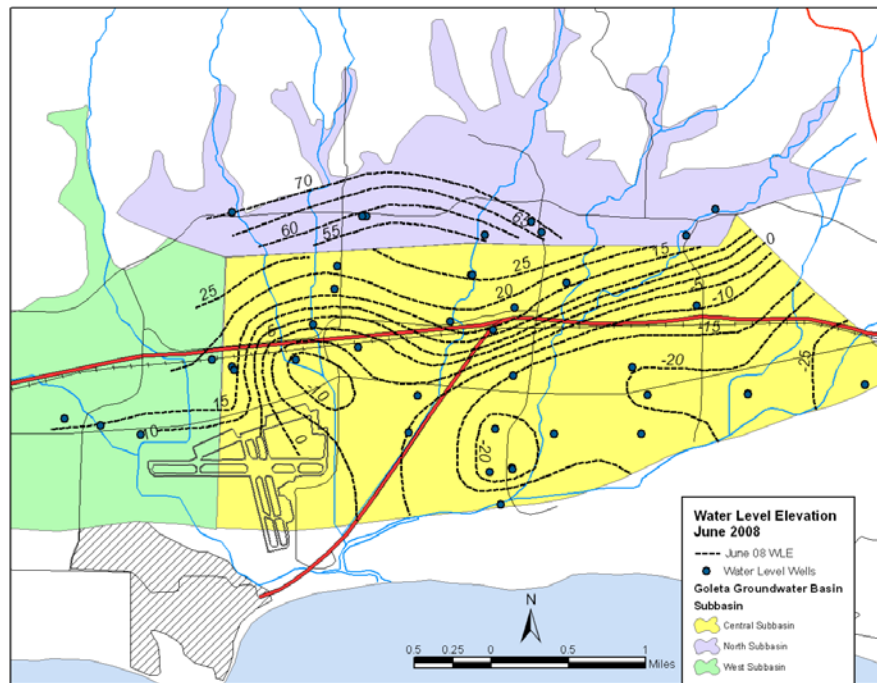
**Notes on Network Modification:**

**09N/32W-6D1** removed; classified as shallow well  
**10N/33W-18G1** removed; classified as shallow well  
**10N/35W-9F1** removed; classified as deep well  
**10N/35W-11J1** removed; classified as shallow well  
**10N/35W-18F2** removed; classified as deep well  
**10N/35W-21B1** removed; classified as deep well  
**11N/35W-20E1** removed; classified as deep well  
**11N/35W-25F3** removed; classified as deep well  
**11N/35W-28M1** removed; classified as deep well

# Groundwater Management Plan

## Goleta Groundwater Basin

### Final



Prepared for  
**Goleta Water District**  
**La Cumbre Mutual Water Company**



By  
Steven Bachman, PhD

May 11, 2010

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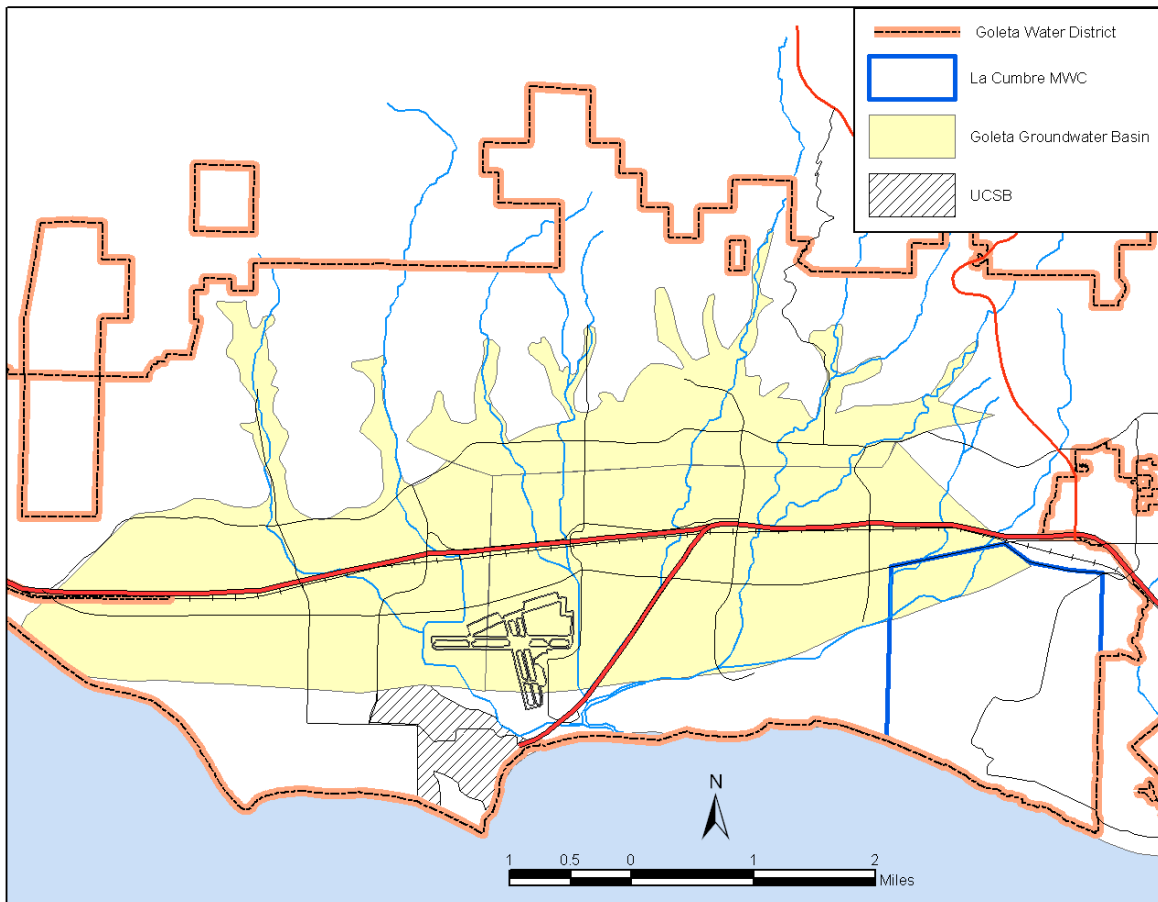
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# 1 Introduction

Goleta Water District (“GWD”) and La Cumbre Mutual Water Company (“La Cumbre”), the purveyors of groundwater in the Goleta Groundwater Basin (Figure 1-1), joined in developing a Groundwater Management Plan (“Plan”) for the basin. This Plan reiterates current adjudication and voter-passed components of groundwater management, addresses groundwater issues, adopts Basin Management Objectives, outlines management strategies for the basin, and recommends future tasks and timelines associated with these tasks.

The process of preparing and adopting the Plan included public meetings with input from stakeholders, public drafts circulated for comments, and adoption by both water purveyors.



**Figure 1-1. Goleta Groundwater Basin with service areas of Goleta Water District and La Cumbre Mutual Water Company.**

## 1.1 Pre-Wright Judgment

As the result of a long period of drier than average years from the 1940s to the 1970s, coupled with growth in the area, water supplies in the Goleta Groundwater Basin

were considered to be short of demand by the 1970s. As a result, GWD adopted various rules and regulations to restrict the use of water. First, GWD adopted Ordinance 72-2, which began a moratorium on new water service connections. The Ordinance was modified over the years to make exceptions for fire hydrant flow and service connections that would result in water savings to GWD. This moratorium remained in effect until December 1996, when Ordinance 96-4 rescinded it following the importation of State Water. Ordinance 72-2 was for the most part superseded by the Responsible Water Policy Ordinance which was adopted in May 1973 by voter initiative. This Ordinance banned the importation of water from outside the County without voter approval, which was largely aimed at preventing GWD from connecting to the State Water Project. As a result of these actions, considerable emphasis was placed on pumping groundwater, so significant pumping in the basin continued.

## **1.2 Wright Judgment**

In 1973 a group of landowners filed suit for the adjudication of water rights in the Goleta North-Central Groundwater Basin (Wright v. Goleta Water District<sup>1</sup>). As is common in groundwater adjudications, after cross complaints and an appeal, the case took two decades to be decided; the decision was finalized in 1989 (“Wright Judgment”). The major elements of the Wright Judgment dealing with groundwater management include:

- Overlying landowners assured of superior rights to groundwater pumping; overlying pumping determined to be 351 acre-feet per year, which can increase without Court approval as long as there is no change in how the pumped groundwater would be used (e.g., change of use would be conversion of agricultural to urban use);
- La Cumbre given senior appropriative right to extract 1,000 acre-feet per year from basin (calculated on a ten-year running average), plus any Temporary Surplus<sup>2</sup>;
- GWD given appropriative right to extract 2,000 acre-feet per year from basin, plus any Temporary Surplus;
- Safe yield of the basin was determined to be 3,410 acre-feet per year;
- Perennial yield, which included 350 acre-feet per year for GWD injection well system and 100 acre-feet per year of return flow (applied water that percolates back to the aquifer), was determined to be 3,700 acre-feet per year;
- GWD required to submit to Court a Water Plan, including development of supplemental supplies, whose objective was to bring the basin into hydrologic balance by 1998;
- Status report on the basin to be filed with the Court on an annual basis;

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<sup>1</sup> Martha H. Wright et al. v. Goleta Water District et al., 1989, Amended Judgment, Superior Court of Santa Barbara County Case No. SM57969.

<sup>2</sup> Temporary Surplus is defined in the Judgment as “The amount of water that can be extracted from the Basin in any Water Year in excess of the Basin's Safe Yield”.

- Overlying pumpers may transfer their water right and well(s) to GWD in return for service from GWD. Such exchanges have added 350 acre-feet per year of water rights to GWD as of 2008 (Table 1-1);
- GWD may inject water into the basin using La Cumbre wells until 1998; after 1998, La Cumbre and GWD may each store water in the basin;
- Court assumes continuing jurisdiction in the basin.
- In 1992, the Court reaffirmed the continuing right of GWD to store up to 2,000 acre-feet per year in the basin<sup>3</sup>.
- In 1998, the Court found that the basin was in Hydrologic Balance<sup>4</sup> and that summary annual reports to litigation parties could replace annual reports to the Court<sup>5</sup>. It also confirmed GWD's storage of 18,084 acre-feet as of 1998.

<i>Year</i>	<i>Base Water Right (AFY)</i>	<i>Exchanges To-Date (AFY)</i>	<i>Total Water Right (AFY)</i>
<b>1992</b>	2,000	23	2,023
<b>1993</b>	2,000	37	2,037
<b>1994</b>	2,000	51	2,051
<b>1995</b>	2,000	51	2,051
<b>1996</b>	2,000	175	2,175
<b>1997</b>	2,000	224	2,224
<b>1998</b>	2,000	226	2,226
<b>1999</b>	2,000	226	2,226
<b>2000</b>	2,000	226	2,226
<b>2001</b>	2,000	226	2,226
<b>2002</b>	2,000	226	2,226
<b>2003</b>	2,000	350	2,350
<b>2004</b>	2,000	350	2,350
<b>2005</b>	2,000	350	2,350
<b>2006</b>	2,000	350	2,350
<b>2007</b>	2,000	350	2,350
<b>2008</b>	2,000	350	2,350
<b>2009</b>	2,000	350	2,350

**Table 1-1. GWD water rights under the Wright Judgment, as filed in GWD's Annual Reports.**

As a result of the Wright Judgment, GWD was required to annually file a report to the Court. In 1998, the Court determined that the GWD had achieved Hydrologic Balance as that term is defined in the Judgment, had successfully complied with the Judgment, and allowed GWD to simplify the report and to no longer file it with the Court

<sup>3</sup> Martha H. Wright et al. v. Goleta Water District et al., 1992, Order Regarding Goleta's Right to Store Water in the North Central Basin, Superior Court of Santa Barbara County Case No. SM57969.

<sup>4</sup> As it pertains to the basin as a whole, Hydrologic Balance exists when the perennial recharge exceeds the perennial extractions from the basin.

<sup>5</sup> Martha H. Wright et al. v. Goleta Water District et al., 1998, Order Regarding Goleta Water District's Tenth Annual Report, Superior Court of Santa Barbara County Case No. SM57969.

but send it to the various parties in the litigation. This report itemizes extractions from the basin, groundwater storage, and changes in groundwater elevations from key wells. GWD has stored water in the basin by direct injection, as well as by taking Cachuma water and its State Water allocation in lieu of pumping groundwater, resulting in 42,530 acre-feet of stored water by 2008 (see Section 4.4.1 – *Groundwater Storage Programs* for details).

### **1.3 SAFE Ordinance (GWD)**

As part of authorization for importation of State Project Water, the Safe Water Supplies Ordinance ("SAFE") was approved by GWD voters in 1991 and amended in 1994<sup>6</sup>. SAFE amended and superseded the Responsible Water Policy Ordinance. The key elements of SAFE include:

- The GWD is authorized to acquire an additional entitlement to the State Water Project in an amount of up to 2,500 acre-feet per year to supplement its allocation of 4,500 acre-feet per year;
- The GWD shall plan for the delivery of 3,800 acre-feet per year of State Water as the amount of firm average long-term yield (this was based on the then-current availability calculations by the State Water Contractors), which includes the basic allocation of 4,500 acre-feet per year, the 2,500 acre-feet per year supplement, and GWD's share of the drought buffer held by the Central Coast Water Authority;
- Any excess water actually delivered over 3,800 acre-feet per year shall be stored in the Central subbasin until the basin is replenished to its 1972 level, for use during drought conditions ("Drought Buffer"). An "Annual Storage Commitment" of at least 2,000 acre-feet per year is required for replenishment to 1972 levels (first instituted in 1997). As of 2008, a total of 42,530 acre-feet of water have been added to basin storage through direct injection and using other water supplies in lieu of pumping groundwater (GWD, 2008);
- The Drought Buffer can only be used for delivery to existing customers when a drought on the South Coast causes a reduction in GWD's annual deliveries from Lake Cachuma, and cannot be used as a supplemental supply for new or additional water demands;
- Once the basin has recovered to 1972 levels, GWD can again utilize the yield of the basin to provide water service to existing customers. It has been estimated that in 2008, storage in the Central subbasin is 6,000 to 12,000 acre-feet above 1972 levels (GWD, 2008). Storage is discussed further in this Plan;
- For each year that all other obligations for water delivery have been met, GWD may provide new service connections up to 1% of the total potable water supply. When new service is connected, the Annual Storage Commitment for the Drought Buffer must permanently increase by  $\frac{2}{3}$  of the

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<sup>6</sup> GWD Ordinances No. 91-01 and 94-03.

new demand. The requirements for new service connections have been met over the last decade, with new service connections adding 559 acre-feet per year of demand, resulting in an increase of the Annual Storage Commitment to 2,373 acre-feet per year.

## **2 Groundwater Basin and Hydrogeology**

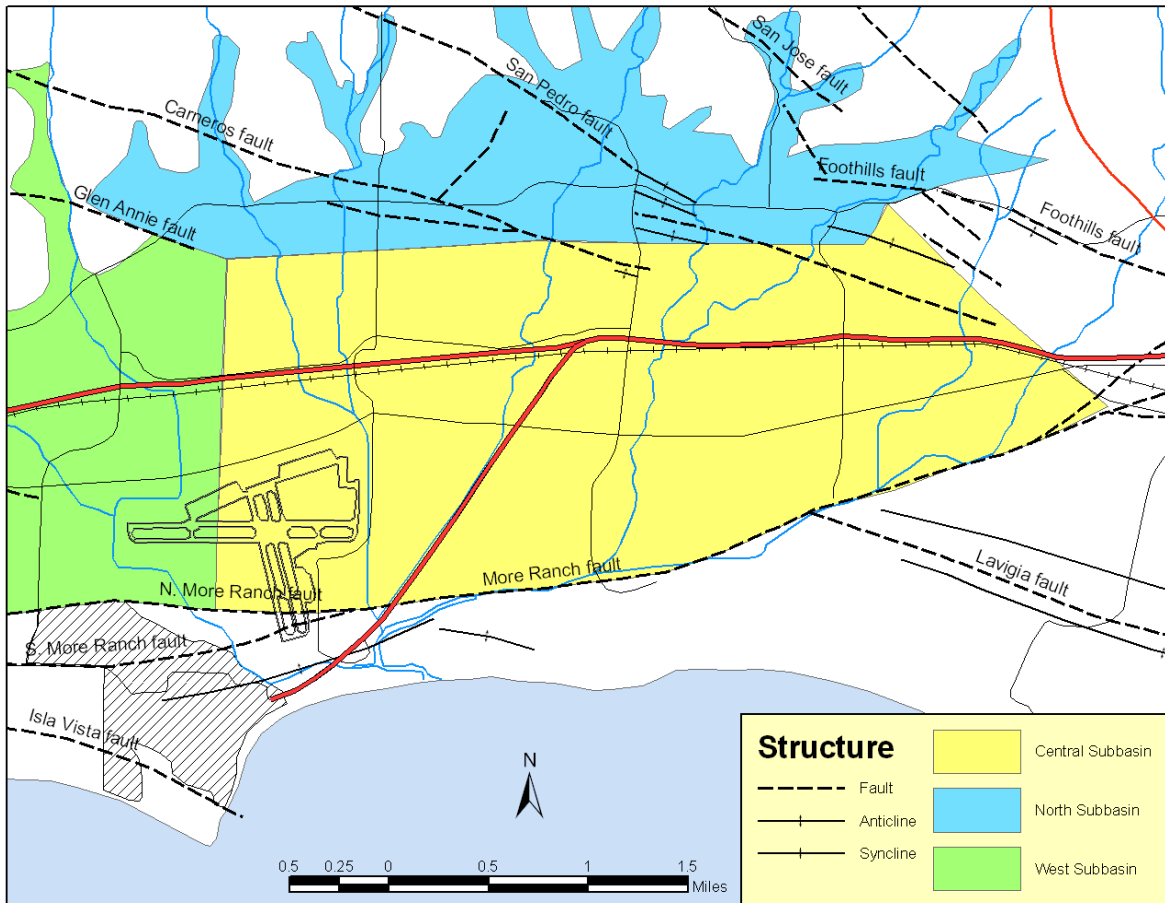
### **2.1 Basin Boundaries**

The Goleta Groundwater Basin is generally divided into three subbasins: the Central subbasin where the majority of the extractions occur; the West subbasin which is generally shallower and has the least extractions; and the North subbasin. The boundaries for these subbasins and for the Goleta basin as a whole vary among investigators. Some of the boundaries coincide with faults that are mapped at the surface or are inferred from hydrogeologic evidence such as large differences in groundwater elevations on each side of the “fault”. Other boundaries are defined by the thinning edges of water-bearing strata against bedrock highs and upstream valleys. Because of the differences in interpretations of this evidence, basin and subbasin boundaries have been drawn differently.

#### **2.1.1 Boundary of Overall Basin**

There are common boundaries among investigators in portions of the basin. The southern boundary of the Goleta Groundwater Basin is defined by the trace of the More Ranch Fault (Figure 2-1), where consolidated rocks of Tertiary age are uplifted along the south side of the fault and form a hydrologic barrier between the ocean and the water-bearing deposits of the ground-water basin (e.g., Upson, 1951). The location of the More Ranch Fault has varied slightly among investigators; for this Plan, the location of the fault (and, therefore, the southern boundary of the groundwater basin) is taken from the latest U.S. Geological Survey (“USGS”) mapping (Minor and others, 2006).

The eastern boundary of the Goleta Groundwater Basin has historically been defined as the location of the Modoc Fault. The Modoc Fault has been considered to be a hydrologic barrier, although the USGS suggested that along the eastern boundary near its southern juncture with the More Ranch fault, groundwater discharges freely from the adjacent Foothill Groundwater Basin on the east into the Goleta Groundwater Basin (Freckleton, 1989).



**Figure 2-1. Basin and subbasin boundaries used in this Plan. Faults and folds are from Minor and others (2006).**

Upson (1951) determined the location of the barrier on the basis of differences in water-level altitudes and the lack of transmission of pumping effects across the fault. Upson (1951), Evenson and others (1962), and Mann (1976) indicated that the quantity of ground water moving across the boundary historically has been small. The USGS also considered the eastern boundary of the basin as the Modoc Fault in a water resources paper (Kaehler and others, 1997), although a more-recent surface geology map by the USGS (Minor and others, 2006) did not identify the Modoc Fault – instead they identified faults and folds across a half mile-wide deformation zone that encompasses the various locations of the boundary by a number of investigators (Figure 2-1). There are no known groundwater wells within this zone of deformation. The eastern basin boundary in the Wright Judgment is within this zone of faulting and folding. For this Plan, the Wright Judgment boundary is considered as the eastern basin boundary.

The northern boundary of the Goleta Groundwater Basin has been defined by the northern edge of water-bearing sediments as they abut or thin out against older more-consolidated sediments. The exact location of the boundary varies with the investigator. For this Plan, the northern basin boundary from the Wright Judgment is used as far as it

extends to the west; west of the Wright Judgment, the basin boundary of CH2MHill (2006) is used.

### **2.1.2 Subbasin Boundaries**

The boundaries between subbasins within the Goleta Groundwater Basin have been defined by either the location of suspected faulting or by changes in hydrologic properties across the boundary (Figure 2-1). None of the subbasin boundaries coincide with surface traces of faults mapped by the USGS (e.g., Minor and others, 2006).

Upton (1951) stated that the “Goleta Fault” and extensions of the Carneros and Glen Annie faults all inhibit the movement of ground water in the main aquifers in the basin. He located the east-west trending boundary on the basis of differences in water levels and lack of transmission of pumping effects across the inferred trace at several sites. Evenson and others (1962) proposed a slightly different location and stated that groundwater moves across this hydrologic barrier in the upper part of the groundwater system. The subbasin boundary in the Wright Judgment largely follows that of Evenson and others. The subbasin boundary was subsequently moved about a thousand feet farther south in reports to the Goleta Water District (e.g., CH2MHill, 2006). For this Plan, the subbasin boundary follows the most-recent interpretation by CH2MHill. However, for discussions of water rights issues, the Wright Judgment boundary must be used; this will be called out in the Plan when necessary.

The north-south-trending boundary between the Central and West subbasins is characterized by significant changes in water quality and hydraulic characteristics thought to be related to different sediment types and thicknesses (GWD, 2008). Evenson and others (1962) believed that there were differences in water levels in wells and in water level trends across the boundary. Mann (1976) documented water quality differences on opposite sides of the boundary. Evenson and others (1962) attributed the boundary to a lateral change in permeability caused by a facies change in the sediments or by faulting in the unconsolidated sediments. The location of the subbasin boundary varies among investigators by 2,500 ft in an east-west direction. The boundary used in this Plan is from the Wright Judgment because of water rights implications. However, hydrographs of wells to the east of the Wright boundary appear to be more similar to those in the West subbasin than in the Central subbasin. For this reason, the subbasin boundary in the new groundwater model is located to the east of the Wright boundary (CH2MHill, 2009b).

## **2.2 Basin Aquifers**

The Goleta Groundwater Basin is bounded by consolidated rocks of Tertiary age. The principal water-bearing units are younger alluvium of Holocene age, terrace deposits and older alluvium of Pleistocene age, and the Santa Barbara Formation of Pleistocene age (e.g., Kaehler and others, 1997). The younger and older alluvium are generally less than 250 ft thick and the Santa Barbara Formation is as much as 2,000 ft thick.

The Santa Barbara Formation is the primary water-bearing unit in the basin and comprises primarily of marine sand, silt, and clay. The hydrostratigraphy of the basin has been divided into hydrostratigraphic zones based on geologic and geophysical logs

(CH2M Hill, 2005). From youngest to oldest, the zones that produce meaningful amounts of groundwater include:

- An Upper Producing Zone consisting of alternating sequences of sands, silts, and sandy clays that attain a maximum thickness of up to 600 feet. In the Central subbasin, mostly private wells produce from this unit.
- A Lower Producing Zone of clean fine sands and silt about 200 ft thick in the Central subbasin. This Lower Zone is separated from the Upper Zone by a clay-rich aquitard. GWD and La Cumbre wells produce from this zone.

The hydraulic connection between the Upper and Lower Producing zones is not well understood. Groundwater elevations measured from wells in each zone have generally been combined when water level contours have been constructed.

## **2.3 Sources of Recharge**

The major sources of recharge (other than artificial recharge by the water agencies) to the Goleta Groundwater Basin are likely infiltration from rainfall, percolation from streambeds, deep percolation of irrigation waters, and leakage from the adjacent (largely upslope) consolidated rocks. Recharge from surface sources can only occur if the sediments between the ground surface and the aquifer can transmit water downward. If, instead, there is a clay layer or other less-transmissive layer above the basin aquifers (a “confining layer”), then downward percolation is largely eliminated. Instead, these areas of the aquifer that are below confining layers must receive their recharge by horizontal flow within the aquifer from other areas where confining layers are absent.

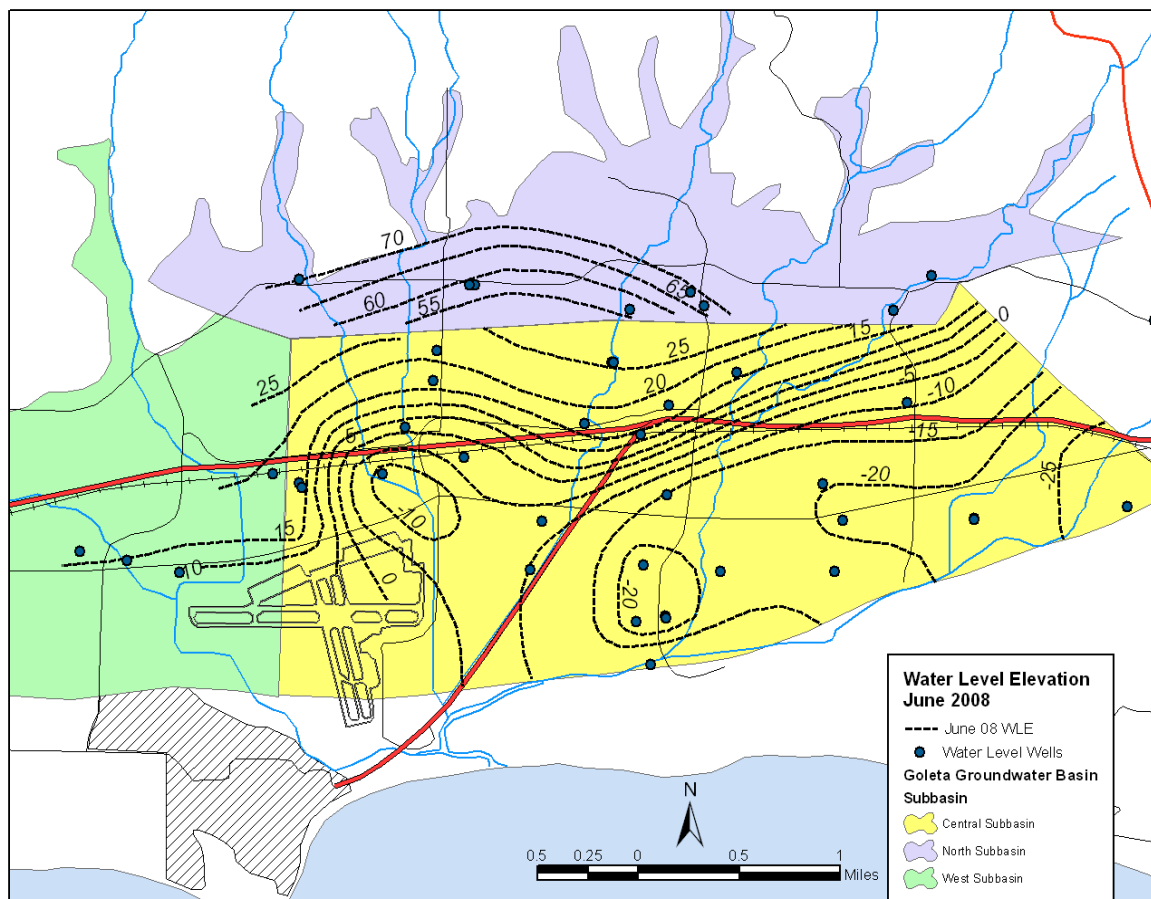
In the Goleta Groundwater Basin, confining layers occur in the seaward portion of the basin. One of the areas where there is little or no communication of surface waters and aquifer waters is around the tidal channels that make up much of the seaward portion of the basin – if there was vertical communication between the tidal waters and the aquifers, groundwater would be as salty as the tidal waters. There has been disagreement among researchers as to how far the coastal confining layers extend inland. Upson (1951) considered much of the area south of Cathedral Oaks Blvd to the ocean as having confined conditions. This effectively eliminates much of the area of the basin from recharge by percolation from overlying sources. Upson estimated that an average of about 3,100 acre-feet per year of rainfall and stream infiltration reach the aquifer. In contrast, Evenson and others (1962) considered the confined area to be much smaller, increasing the area for direct recharge from surface sources.

Much of the Central subbasin is likely under confined conditions. For the subbasin to receive recharge from the adjacent North subbasin (which is largely unconfined), the proposed fault(s) that separates the subbasins must be “leaky” – that is, it is only a partial barrier to groundwater flow, allowing some groundwater to flow thorough the fault plane into the Central subbasin.

## **2.4 Groundwater Elevations**

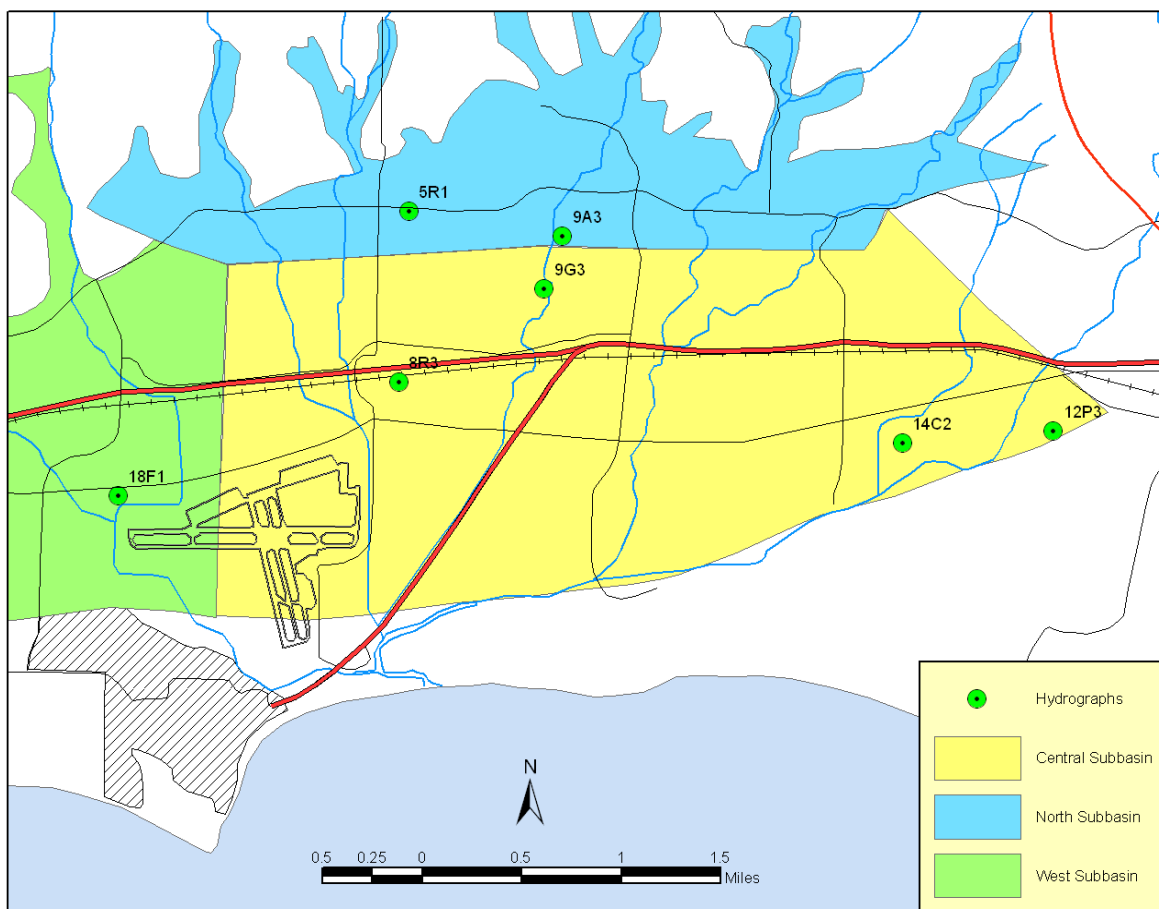
Groundwater elevations have been collected from wells in the Goleta Groundwater Basin since at least the 1940s. These records have now been collected and entered into

digital databases for analysis. GWD also contracted a land survey of all wells used for monitoring groundwater elevations so that both the location and the elevation of the wells are known with some accuracy. Contours of water level elevations from the June 2008 measurements are shown in Figure 2-2. Note that groundwater elevations are lowest in the southeastern portion of the Central subbasin (deeper than 25 feet below sea level) and that the regional groundwater gradient is generally from north to south. This gradient reflects the movement of recharge water from the streams and outcrops on the northern side of the Goleta Groundwater Basin towards the areas where pumping is highest. The groundwater elevations vary by as much as 40 feet across the boundary between the North and Central subbasins (Figure 2-2), suggesting that the boundary is at least a partial barrier to groundwater flow.



**Figure 2-2. Contours of groundwater elevations for June 2008 measurements. Contour interval is 5 feet, datum is mean sea level. Wells which were measured are indicated by a dot on the map.**

The analysis of groundwater elevations is subdivided into the three subbasins because each subbasin shows a different historical trend. The locations of the wells used in the hydrograph displays are indicated on Figure 2-3.

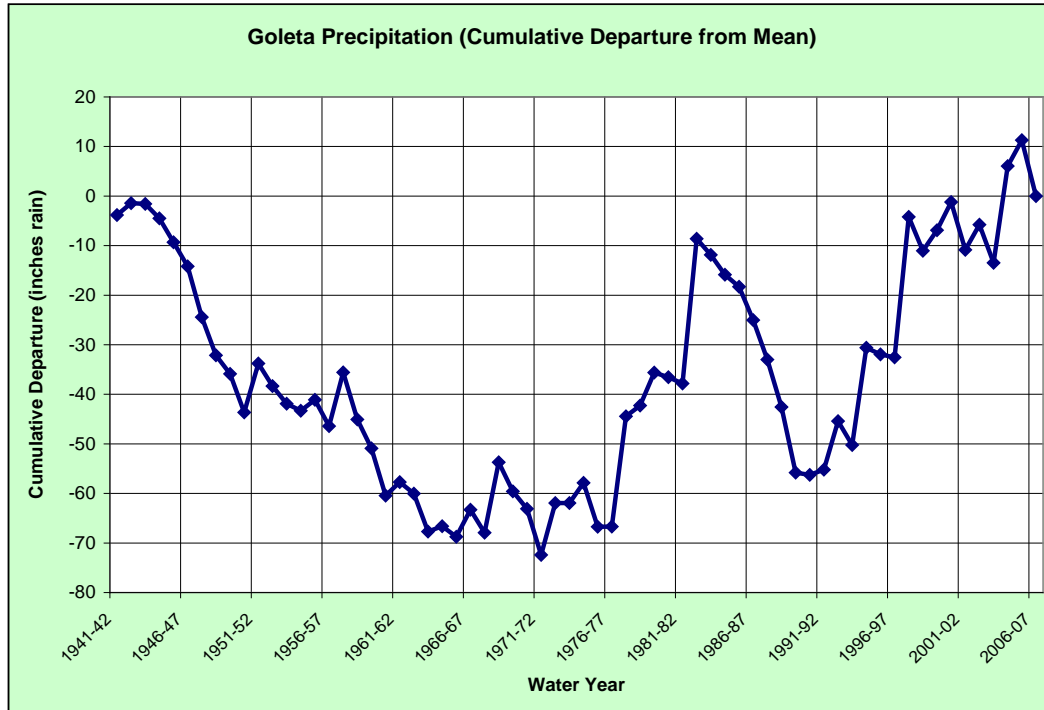


**Figure 2-3. Locations of wells for which hydrographs are included in this Plan.**

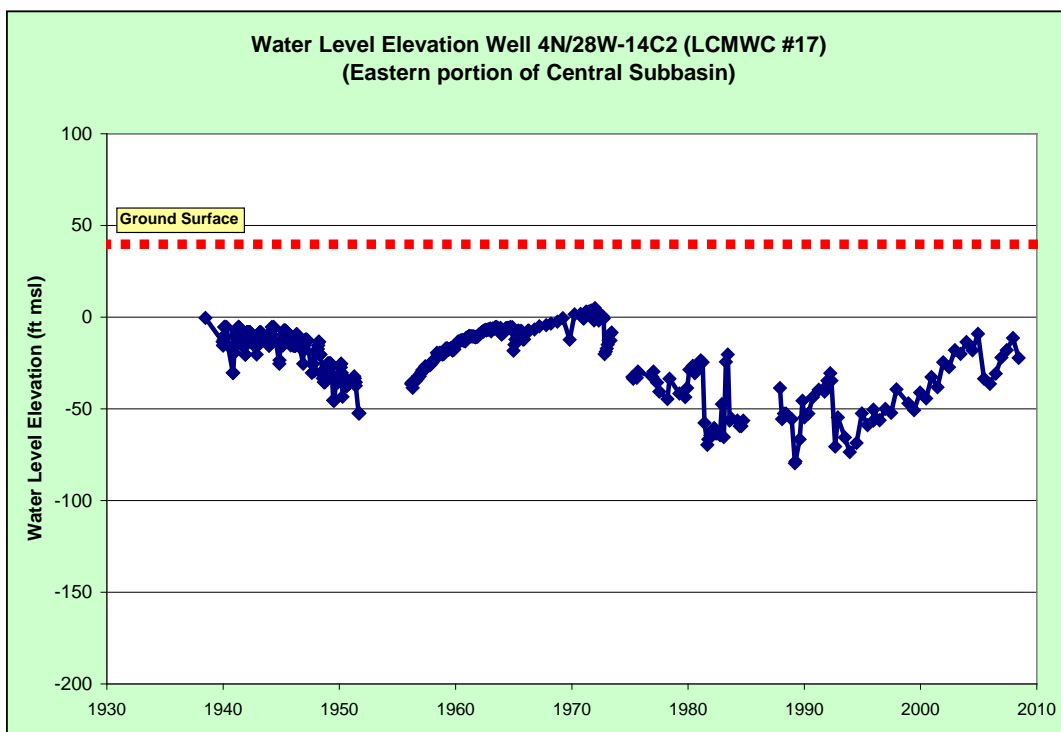
## 2.4.1 Central Subbasin

Groundwater elevations in the Central subbasin have fluctuated by almost 150 feet over the last 70 years (e.g., Figure 2-5 to Figure 2-9). The wet climatic cycle ending in the 1940s is commonly the high historical groundwater elevation in many coastal basins of California; however, in the Central subbasin, high groundwater elevations in the 1940s were matched in many wells during the early 1970s and at present. Thus, the basin is currently near or above historical high groundwater conditions.

When groundwater basins are being pumped within the yield of the basin and the primary sources of recharge to the basin are rainfall and subsequent runoff (as is the case in the Goleta Groundwater Basin), hydrographs in a basin commonly reflect the local climatic patterns. These climatic patterns can be represented by a cumulative departure curve such as shown in Figure 2-4, where the dropping slope of the line indicates periods of less rainfall and the rising slope indicates periods of abundant rainfall. For Goleta, the lowest cumulative departure occurred in the late 1960s and early 1970s.



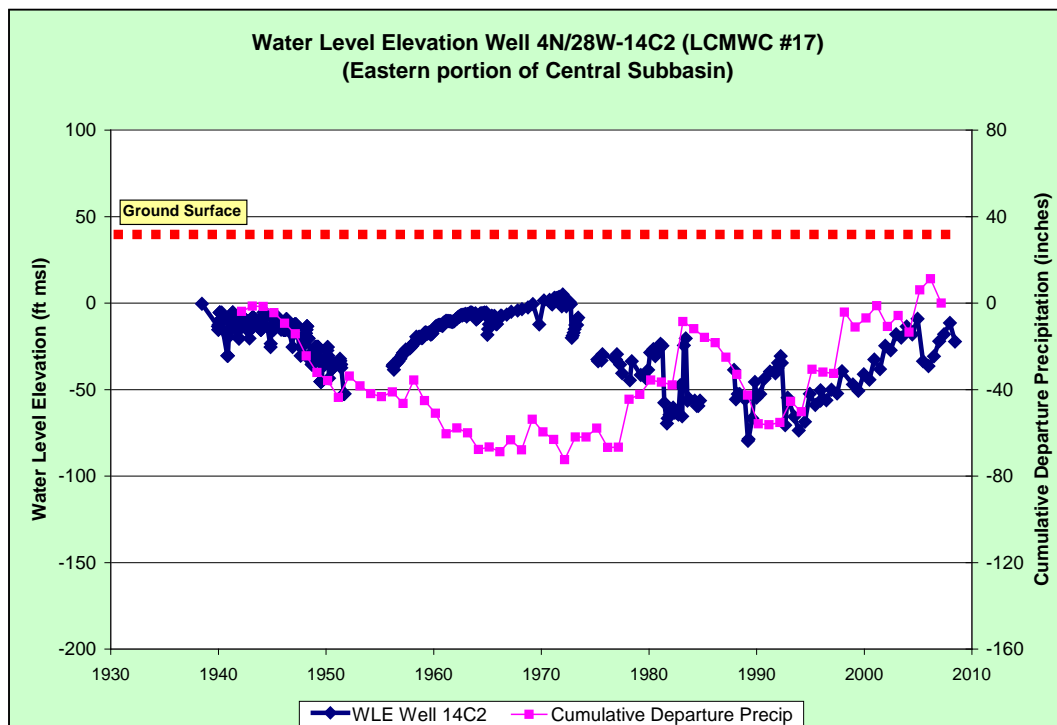
**Figure 2-4. Rainfall at Goleta Fire Station #14 (Los Carneros Rd between Calle Real and Cathedral Oaks), cumulative departure from mean. Portions of the curve that are going down with time indicate periods of below-normal rainfall, whereas portions of the curve that are going up indicate periods of above-normal rainfall.**



**Figure 2-5. Hydrograph of well 14C2 in the eastern portion of the Central subbasin.**

However, hydrographs for the Central subbasin do not track this pattern. In Figure 2-6, the cumulative departure curve is superimposed on the hydrograph for well 14C2. As indicated, the water level elevations tracked the cumulative departure into the late 1950s, but then diverged. During the late 1950s to the early 1970s, groundwater elevations were rising during drier than normal conditions. However, as rainfall increased during the 1970s to 1983, groundwater elevations dropped during that time. The climatic trend and the groundwater trend are then synchronous again for the remaining 25 years. This pattern generally suggests that the Central subbasin was pumped less than its yield before 1972, above its yield in the 1970s and early 1980s, and within its yield since that time.

Although groundwater elevations are near historical high in the Central subbasin, they are well below land surface elevation and below sea level. Groundwater elevations below sea level in coastal basins that abut the ocean are always a concern because of the potential for seawater intrusion into the aquifer. Unfortunately, there are examples of seawater intrusion caused by low groundwater elevations in Orange, Los Angeles, Ventura, San Luis Obispo, and Monterey counties. As discussed in section 2.1 - *Basin Boundaries*, the More Ranch Fault apparently provides protection from seawater intrusion by uplifting a block of older material across what could be a pathway for seawater to move inland in the aquifer. This is not unprecedented in coastal basins – the Newport-Inglewood Fault provides similar protection along the Orange and Los Angeles counties' coastline, except in areas where buried canyons cut through the older sediments in the uplifted fault block.



**Figure 2-6. Same as Figure 2-5, except cumulative departure for rainfall from Figure 2-4 is superimposed on hydrograph.**

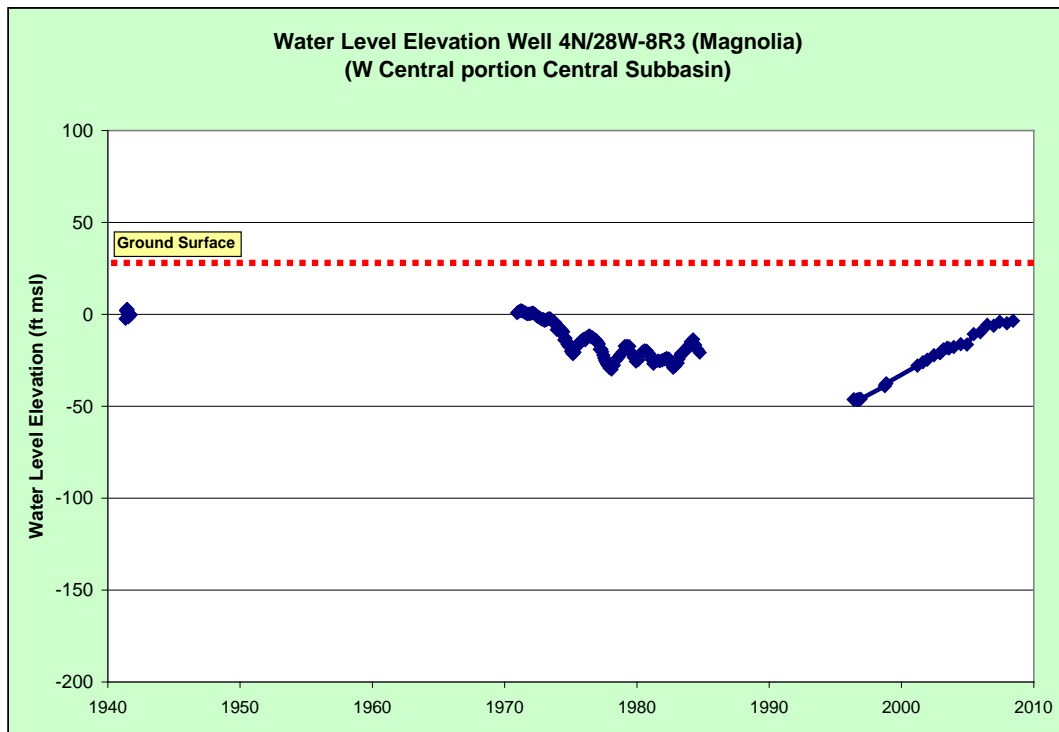


Figure 2-7. Hydrograph of well 8R3 in the western portion of the Central subbasin.

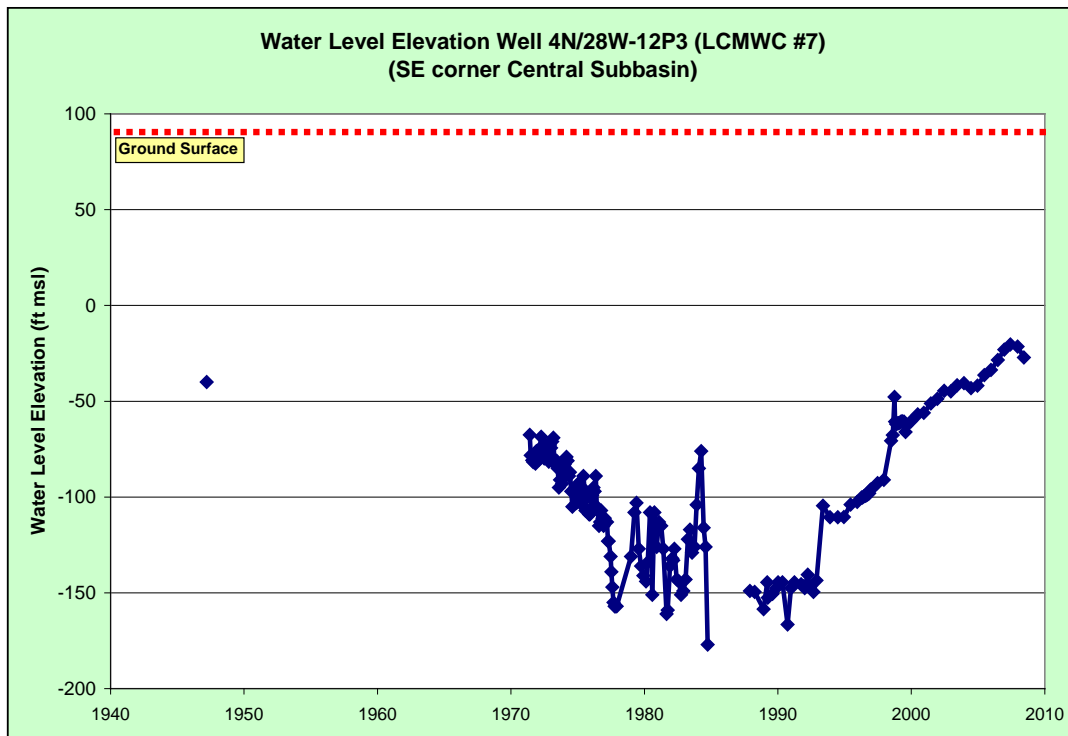
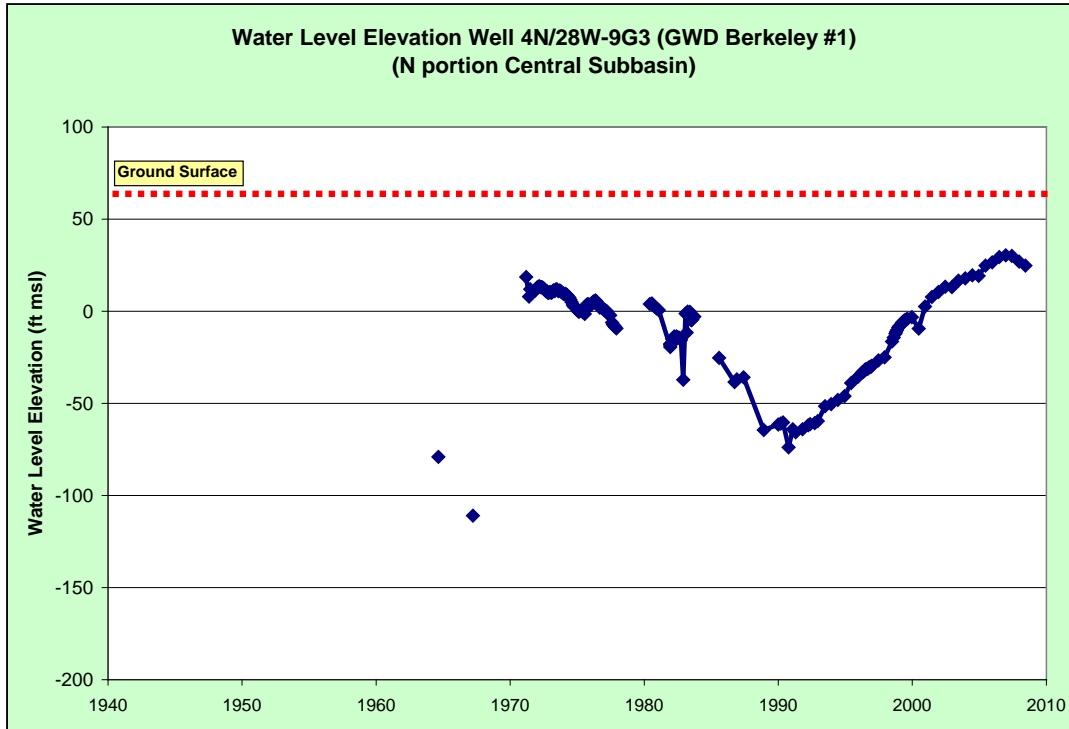


Figure 2-8. Hydrograph of well 12P3 in far southeastern corner of Central subbasin.



**Figure 2-9. Hydrograph of well 9G3 in northern portion of Central subbasin.**

## **2.4.2 North Subbasin**

Groundwater elevations have generally fluctuated within a narrower range in the North subbasin than in the Central subbasin (Figure 2-10 and Figure 2-11). The overall trend in groundwater elevations is similar to the Central subbasin, with groundwater highs in the 1970s and today and a groundwater low in the early 1990s. Groundwater elevations are generally above sea level and have approached land surface in some wells.

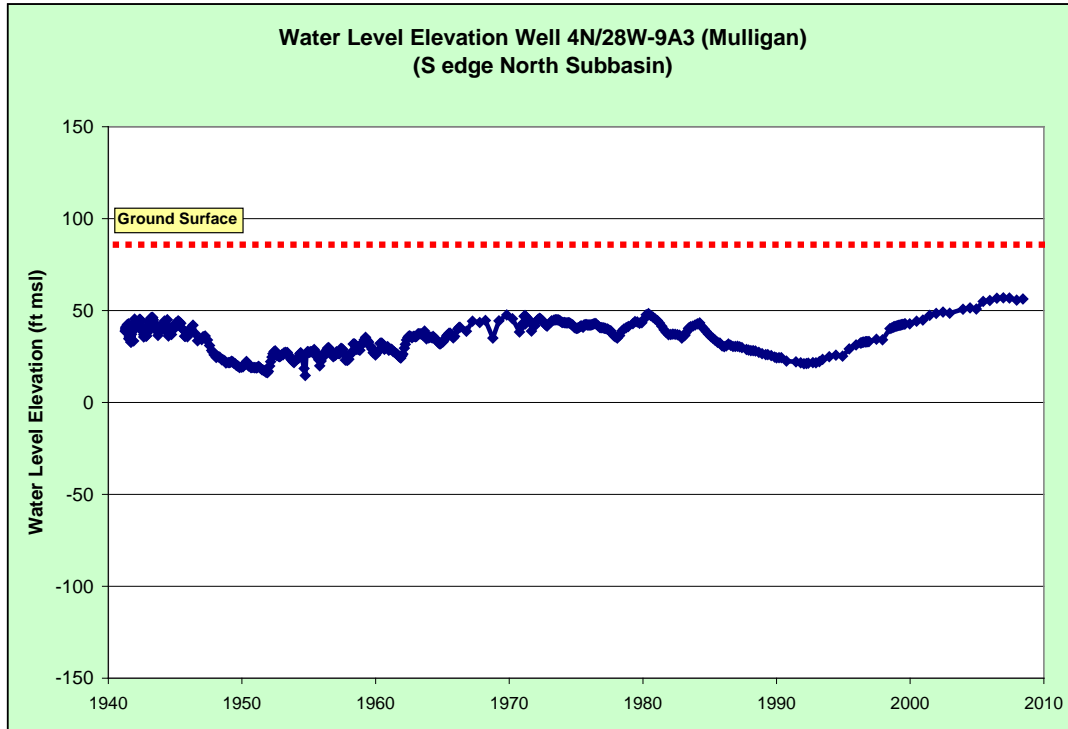


Figure 2-10. Hydrograph of well 9A3 along the southern edge of the North subbasin.

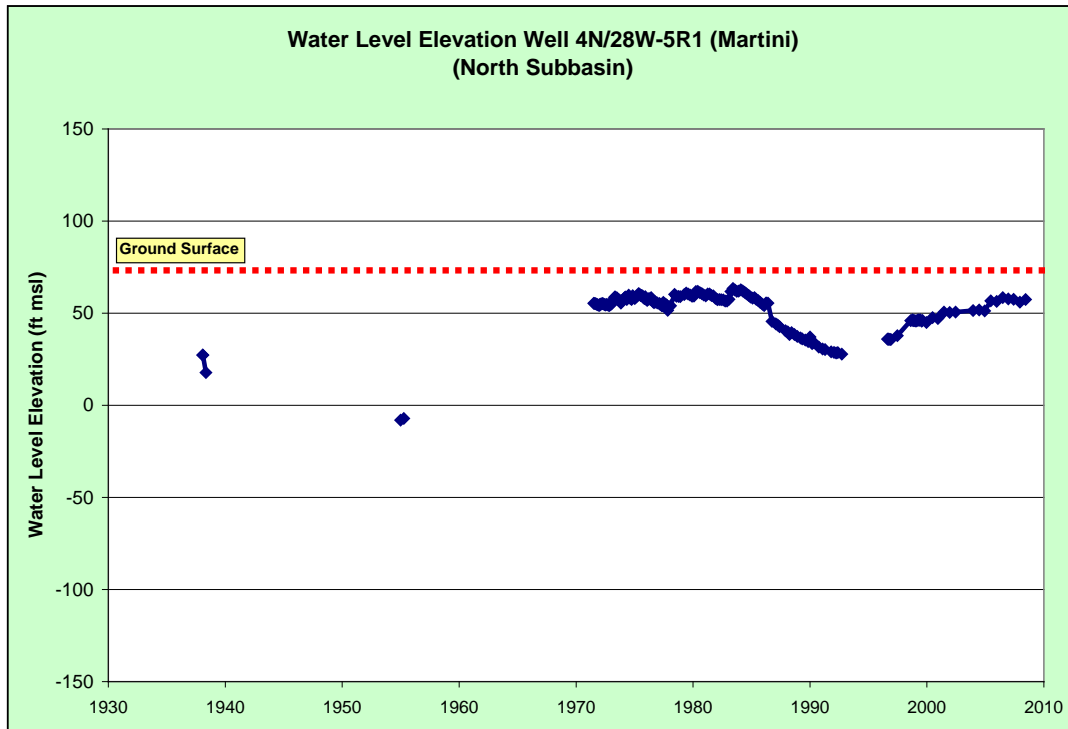


Figure 2-11. Hydrograph of well 5R1 in the North subbasin.

### 2.4.3 West Subbasin

Although groundwater elevations in historical records have dropped below ground surface, groundwater elevations today are very near the surface (e.g., Figure 2-12). When groundwater elevations are this high, they can create springs and boggy areas, as well as causing problems to the foundations of buildings. CH2MHill (2009a) reported local problems caused by the high groundwater elevations. It is likely that the current high groundwater elevations were the natural condition in the West subbasin, but may not be appropriate in a managed basin.

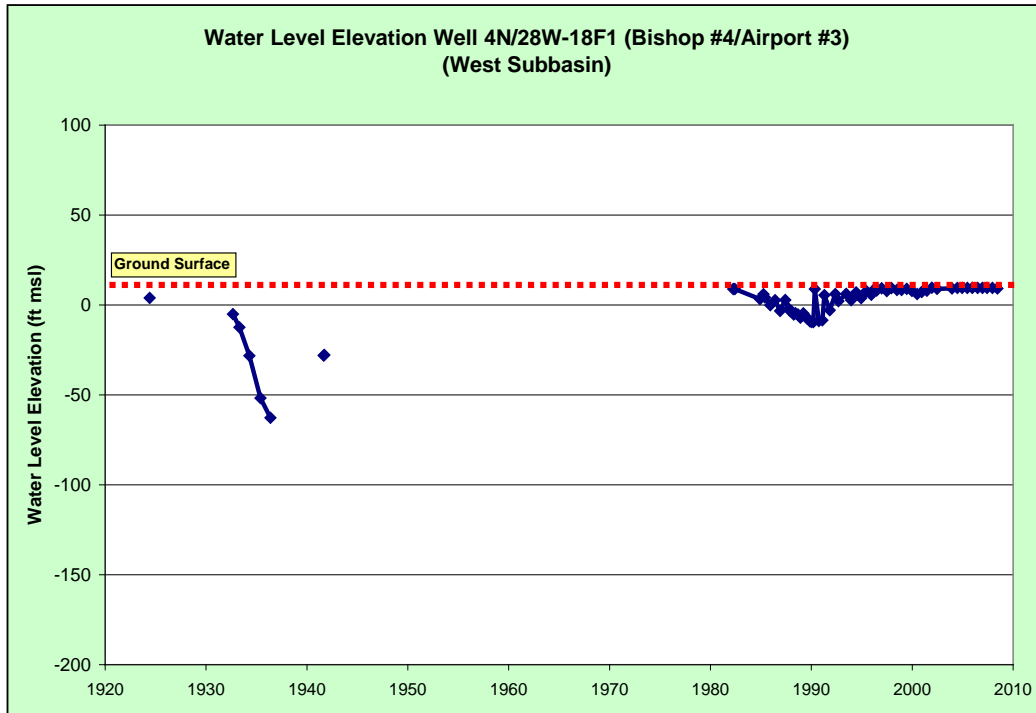


Figure 2-12. Hydrograph of well 18F1 in West subbasin.

## **3 Groundwater Quality and Pumping**

### **3.1 Groundwater Quality**

Groundwater quality considerations in basin management generally involve several aspects of water quality: 1) existing poor-quality water in parts of the basin that must be prevented from spreading across the basin (e.g., areas of saline water or high nitrates), 2) potential degradation of basin water by poor-quality water being pulled in from areas outside the aquifers (e.g., intrusion of seawater or high salts being pulled from surrounding sediments), and 3) overlying sources of contamination that could leak into the aquifers (e.g., leaking underground tanks). The Goleta Groundwater Basin has aspects of all three of these considerations.

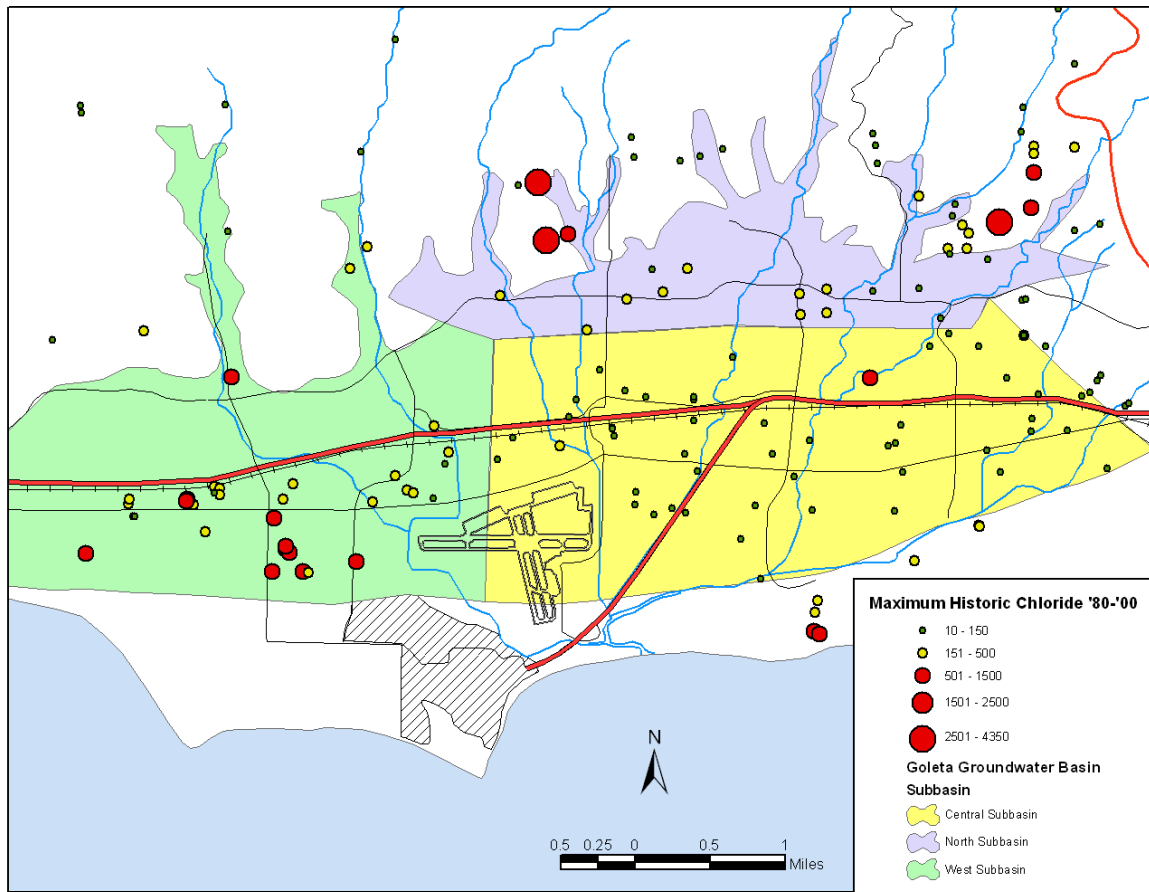
Groundwater in the Goleta Groundwater Basin is of a calcium bicarbonate nature (DWR, 2009). Water quality is similar in nature to other coastal groundwater basins, where groundwater commonly flows through geologically-young marine sediments and becomes relatively mineralized. Chloride is an issue in some of the coastal basins, especially when there is a connection with the ocean and seawater intrusion can occur.

#### **3.1.1 Historical Groundwater Quality**

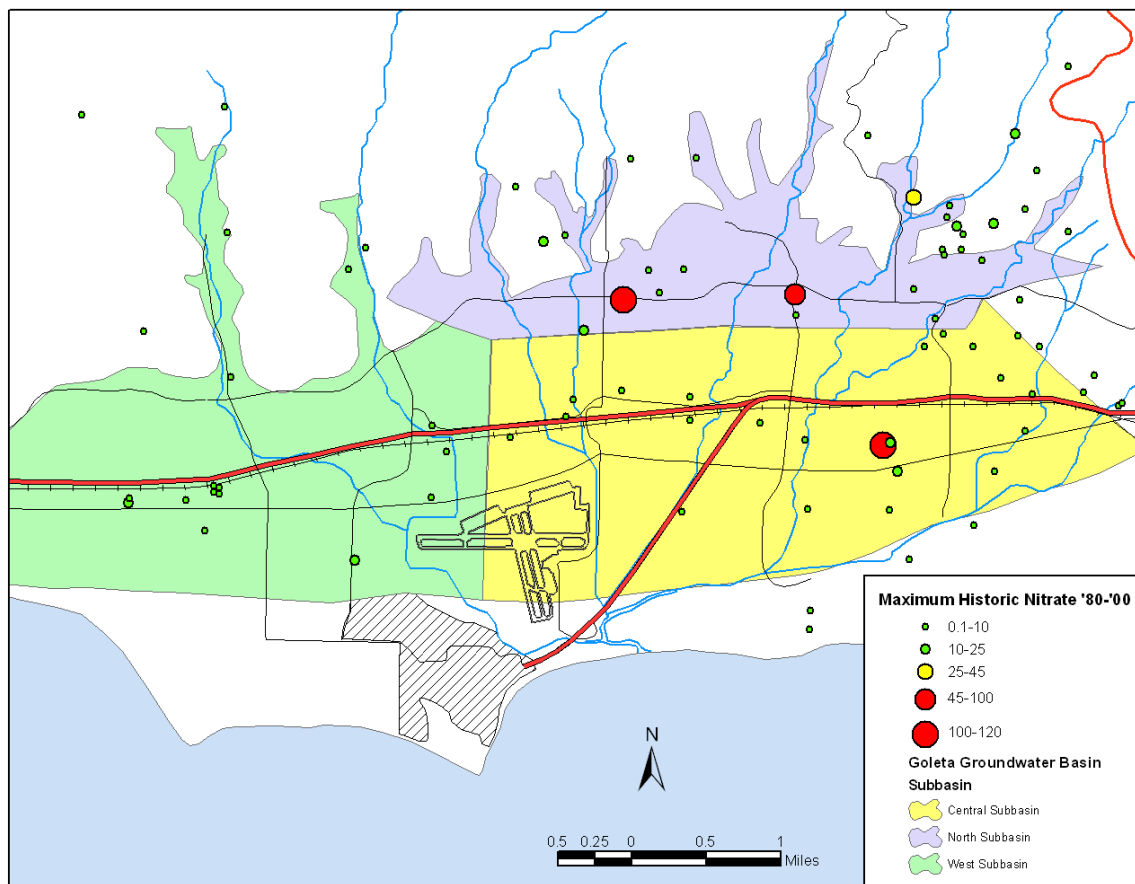
In early reports, water quality was considered fair in the Central subbasin, although chloride concentrations were somewhat elevated in portions of the West and North subbasins (up to about 200 mg/L) (Upson, 1951). Although below the drinking water standard, irrigation water with chloride at that concentration can harm salt-sensitive crops.

During the historical period 1980 to 2000 for which there are significant data on groundwater quality, chloride concentrations in the Central subbasin were generally less than the approximate 150 mg/L level that could affect salt-sensitive crops and well below the drinking water standard of 500 mg/L (Figure 3-1). However, portions of the North and West subbasins had chloride concentrations above the drinking water standard. Historical nitrate levels were significantly below the drinking water standard except in three wells (Figure 3-2); this is surprising, given the rural agricultural heritage of the basin (agricultural fertilizers, concentrations of ranch animals, and septic systems are the largest sources of nitrate in many basins). Both sulfate and total dissolved solids (TDS) were above the secondary drinking water standards in many wells in the North and West subbasins (Figure 3-3, Figure 3-4).

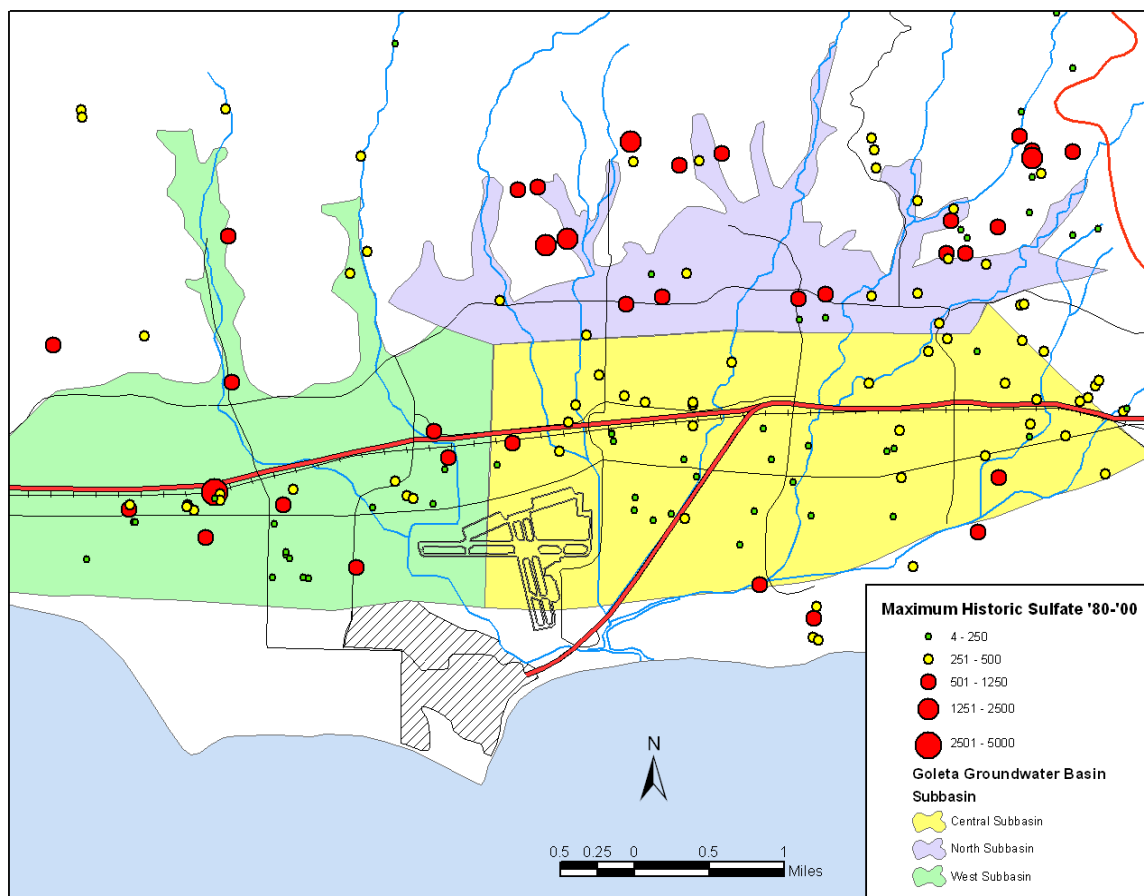
Iron and manganese have historically been a problem in the basin, with most wells in all subbasins having a maximum recorded concentration above the secondary drinking water standards (Figure 3-5, Figure 3-6).



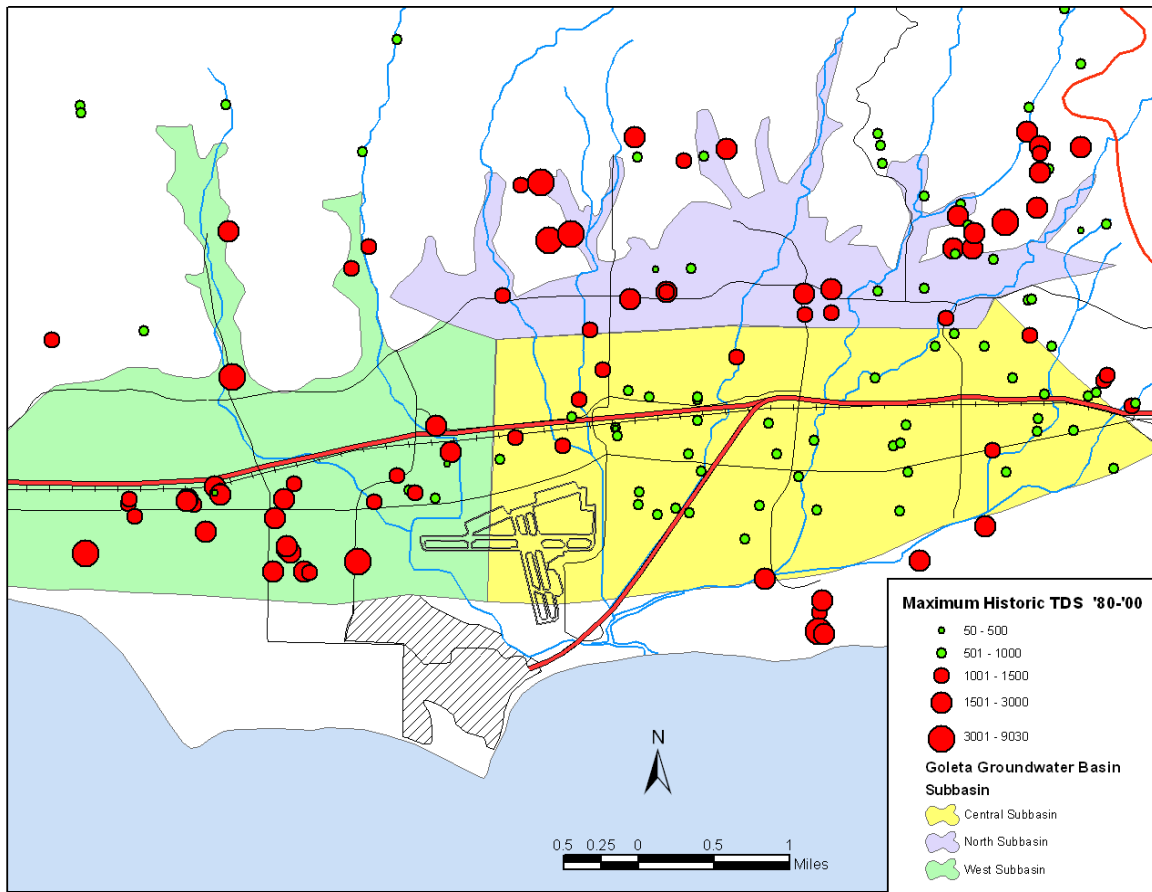
**Figure 3-1. Maximum historic chloride concentrations in wells from 1980 to 2000. Concentrations are in mg/L. 500 mg/L is the secondary drinking water standard for chloride; crop damage may occur in salt-sensitive crops when irrigation water is above about 150 mg/L.**



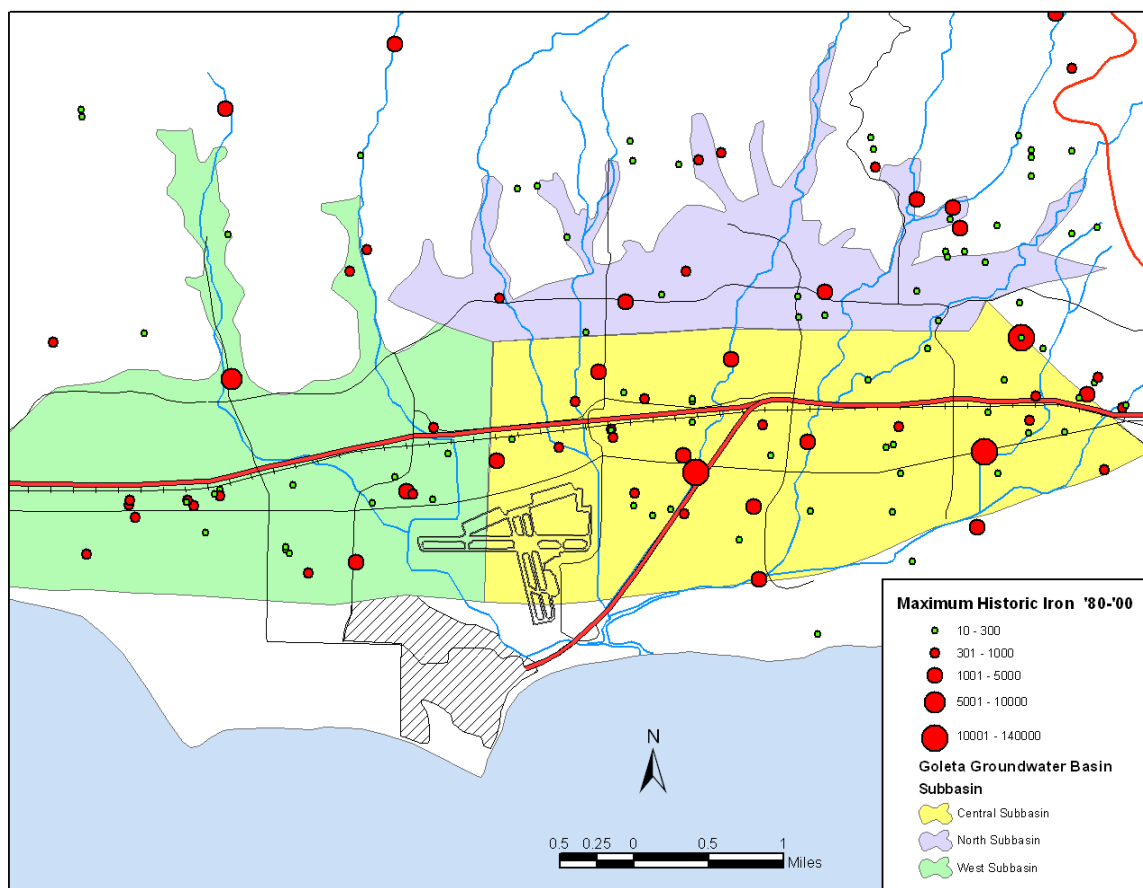
**Figure 3-2. Maximum historic nitrate concentrations in wells from 1980 to 2000. Concentrations are in mg/L of  $\text{NO}_3$ . 45 mg/L of nitrate as  $\text{NO}_3$  is a primary drinking water standard.**



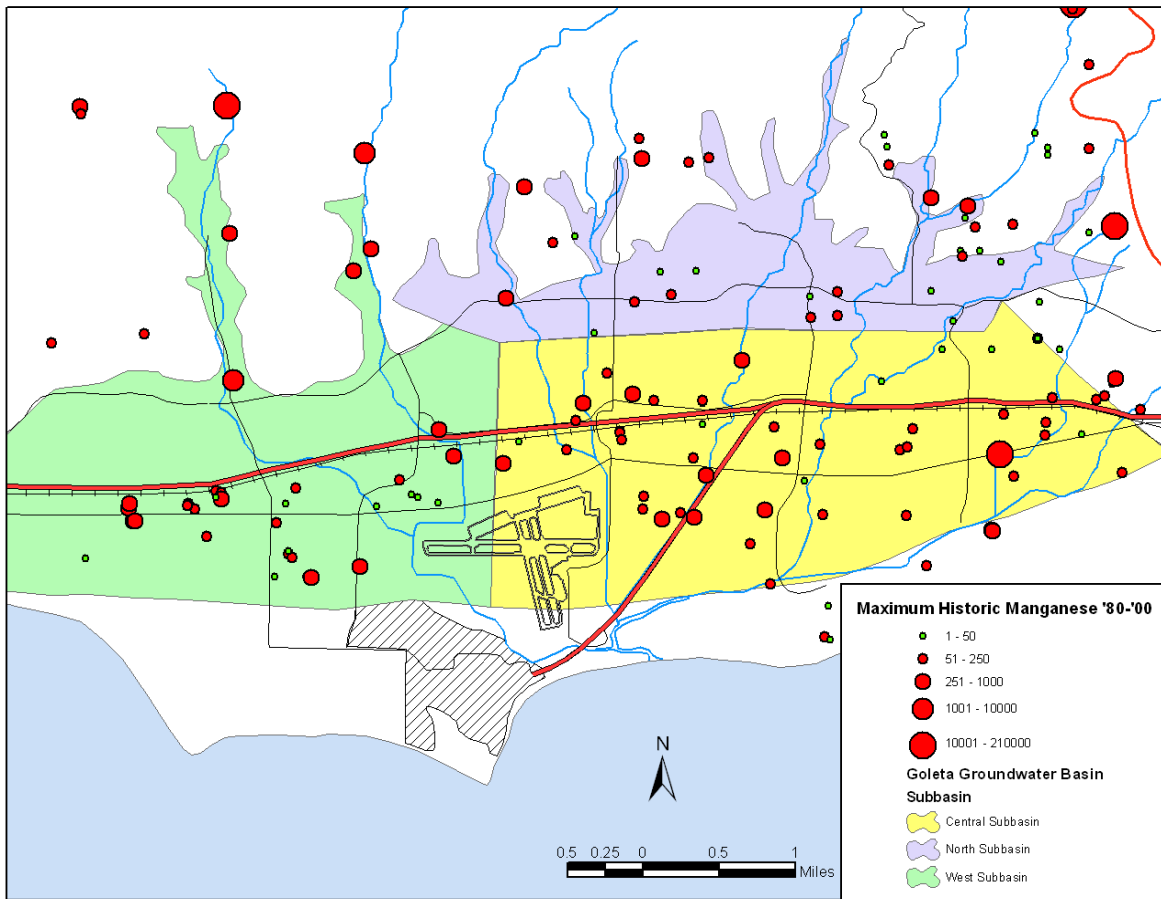
**Figure 3-3. Maximum historic sulfate concentrations in wells from 1980 to 2000. Concentrations are in mg/L. 500 mg/L is the secondary drinking water standard for sulfate.**



**Figure 3-4. Maximum historic total dissolved solids (TDS) concentrations in wells from 1980 to 2000. Concentrations are in mg/L. 1000 mg/L is the secondary drinking water standard for TDS.**



**Figure 3-5. Maximum historic iron concentrations in wells from 1980 to 2000. Concentrations are in  $\mu\text{g/L}$ . 300  $\mu\text{g/L}$  is the secondary drinking water standard for iron.**



**Figure 3-6. Maximum historic manganese concentrations in wells from 1980 to 2000.**  
Concentrations are in µg/L. 50 µg/L is the secondary drinking water standard for manganese.

### 3.1.2 Current Groundwater Quality

A series of maps of concentrations of key chemicals are included as Figure 3-7 to Figure 3-12. None of the reporting wells had chloride concentrations above the drinking water standard during the last decade (Figure 3-7). However, the chloride concentration in an industrial well in the southern portion of the Central subbasin was 370 mg/L in 2007. The well was above the secondary (taste and odor) drinking water standard (Maximum Contaminant Level or “MCL”) for Total Dissolved Solids (TDS). Iron and manganese continue to be a problem that can require treatment of drinking water before it is served to customers – most of the groundwater in the Central subbasin has concentrations of these two constituents that are above the secondary drinking water standard (Figure 3-11 and Figure 3-12).

Trends in water quality over the last two decades are illustrated in Figure 3-13 to Figure 3-19. Chloride concentrations in the Central subbasin generally reached their maximum in the late 1980s and early 1990s, decreasing after that time (Figure 3-14). This period of poorer groundwater quality coincides with the period of heaviest pumping from the basin (Figure 3-21), a correlation that needs to be considered in basin

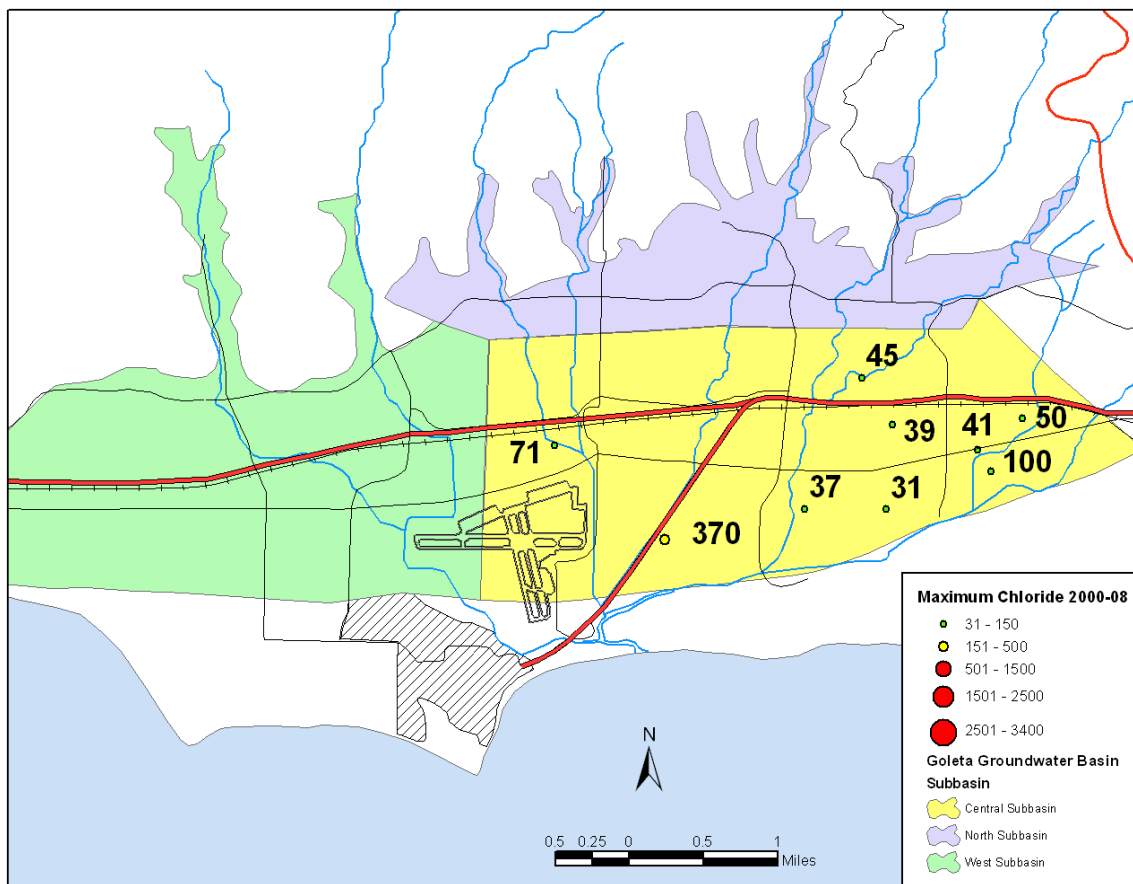
management schemes. Injection of lower-chloride Cachuma spill water may also have contributed to better-quality groundwater near La Cumbre's wells.

There are a number of spills and leaks of contaminants at the ground surface overlying the Goleta Groundwater Basin (Figure 3-20). The spilled or leaked contaminants range from gasoline (the most common) to dry cleaning fluid. The agency responsible for enforcing the cleanup of most of these sites is the State Water Resources Control Board, through the local Regional Water Quality Control Board. The Regional Board tracks each of these sites, approves remediation plans, and eventually determines when the site is remediated and the case is closed. For the roughly 175 sites in this Goleta-Santa Barbara area, their current status is:

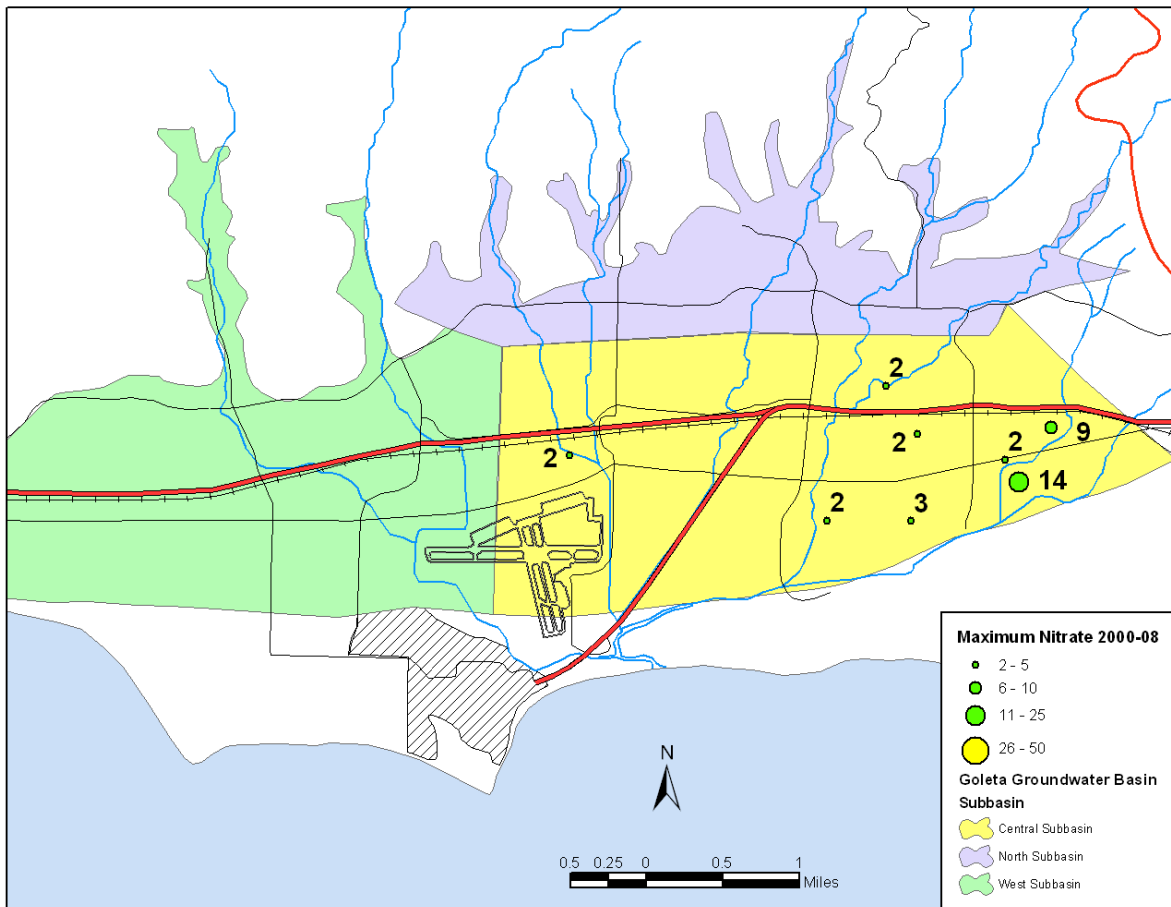
- 50% have been remediated and the case is closed;
- 20% are currently being remediated;
- 25% are currently being assessed for possible remediation; and
- 5% are currently being monitored for verification of contamination.

These spills and leaks are only a potential problem to the aquifers in areas of the basin where there are no confining layers that separate the aquifers from the surface soils – the danger is in the recharge areas to the basin where contaminants may move freely from the ground surface to the aquifer. These recharge areas, which are discussed in the earlier section 2.3-*Sources of Recharge*, are generally in the foothills to the north of the majority of the spills. Periodically reviewing the status of contamination sites near public water supply wells is a recommendation discussed in section 5-*Recommended Future Strategies*.

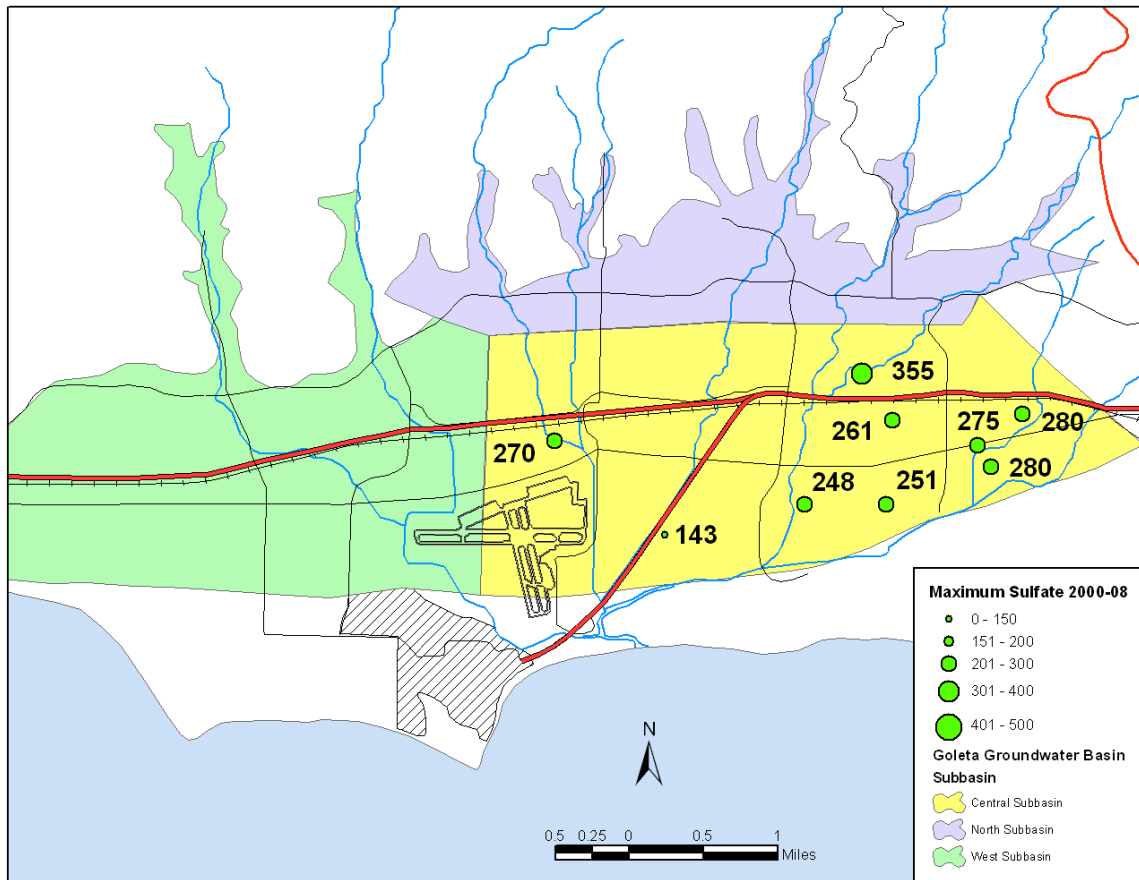
The interface between overall groundwater management and remediation of contaminated sites occurs when regional groundwater gradients affect remediation of a site. This may especially be true in the West subbasin, where very high groundwater elevations and lack of significant water-supply pumping may hamper site remediation efforts.



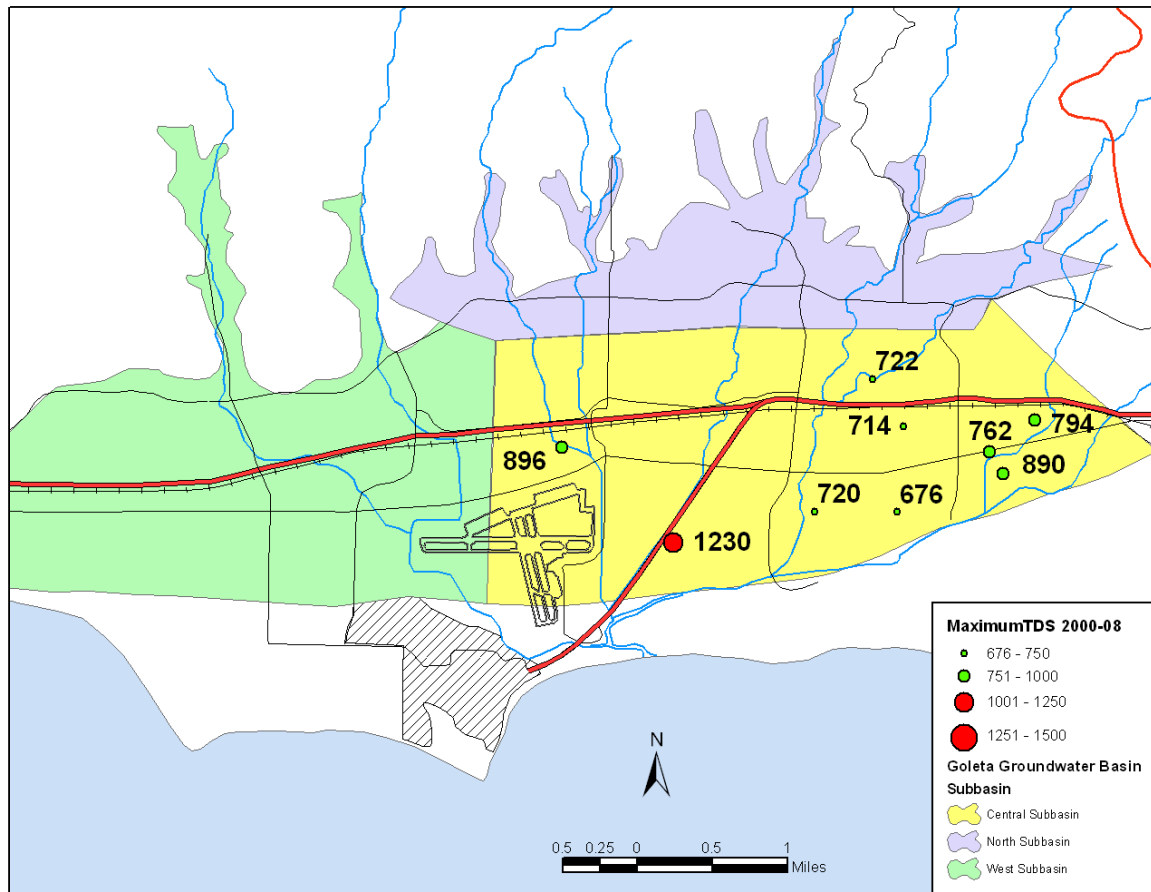
**Figure 3-7. Maximum chloride concentrations reported to DPH from wells during the 2000s. Concentrations are in mg/L. 500 mg/L is the secondary drinking water standard for chloride.**



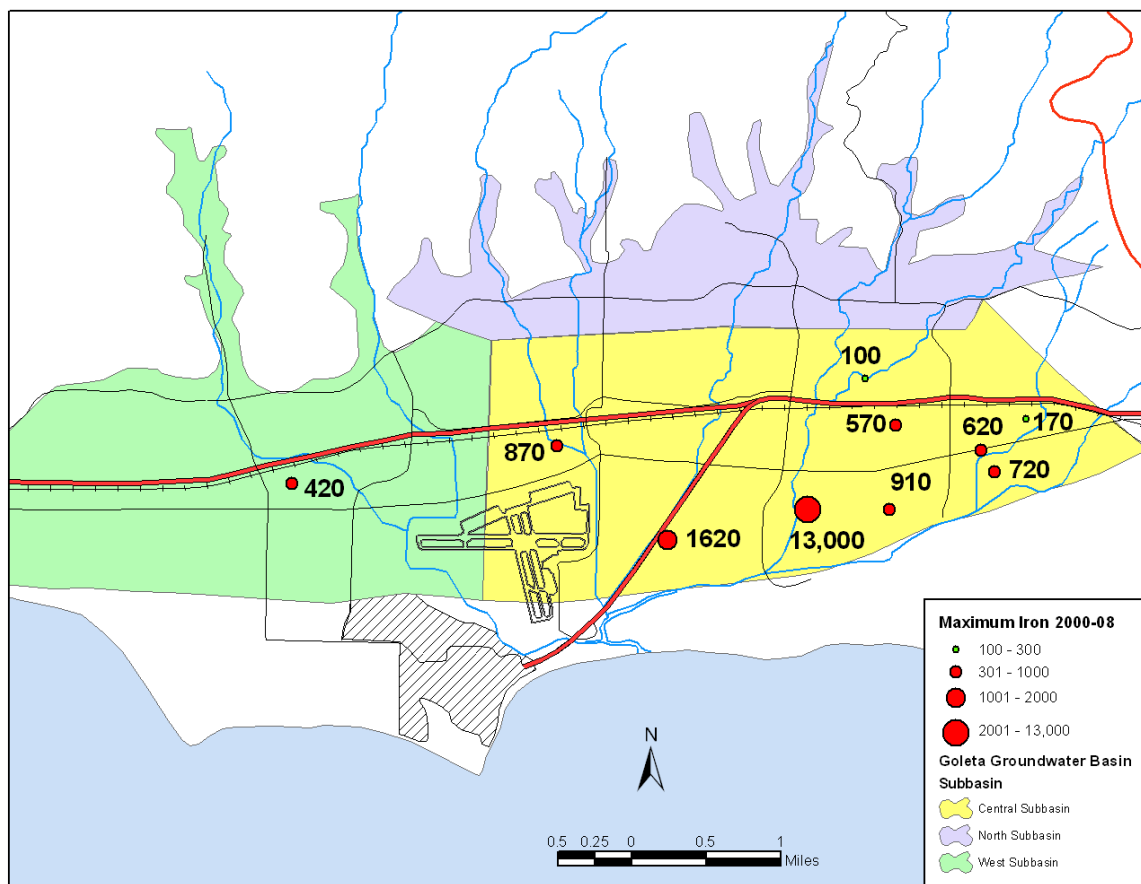
**Figure 3-8. Maximum nitrate concentrations reported to DPH from wells during the 2000s. Concentrations are in mg/L of NO<sub>3</sub>. 45 mg/L of nitrate as NO<sub>3</sub> is a primary drinking water standard.**



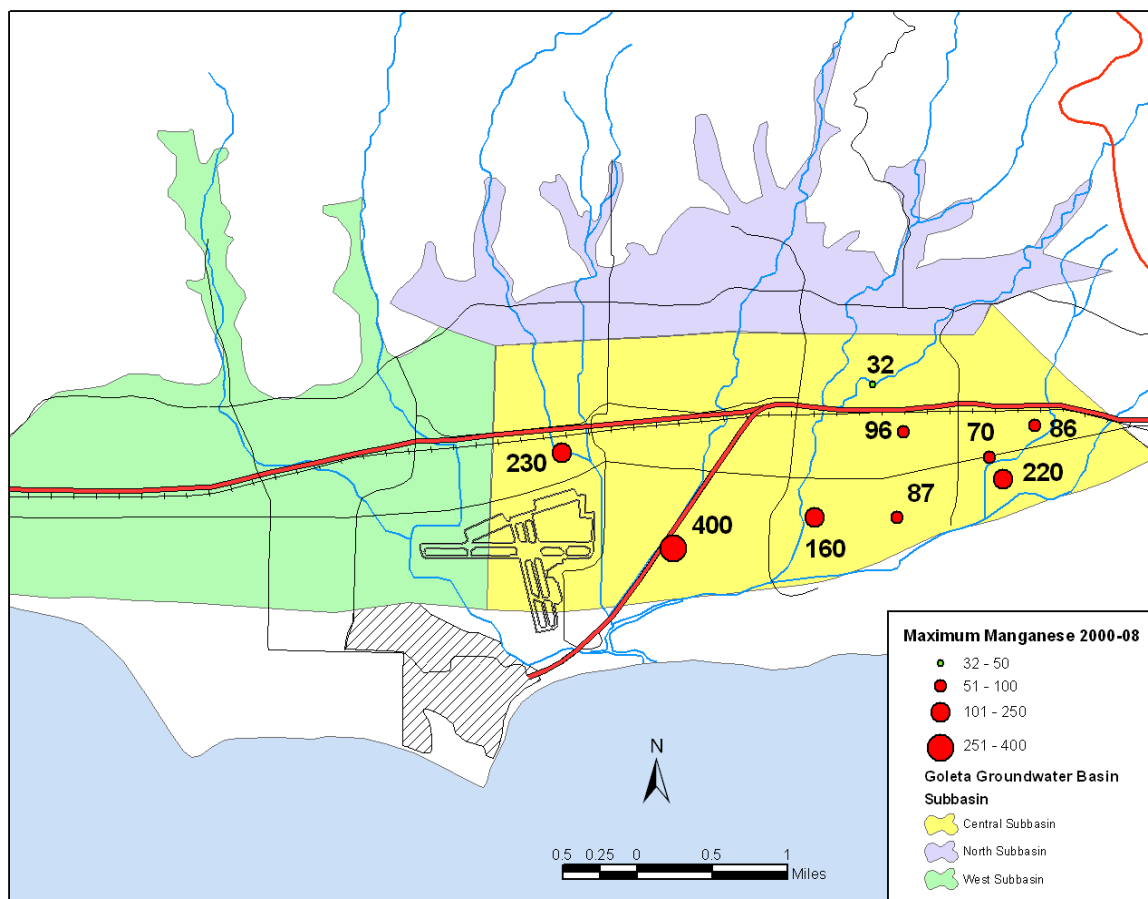
**Figure 3-9. Maximum sulfate concentrations reported to DPH from wells during the 2000s. Concentrations are in mg/L. 500 mg/L is the secondary drinking water standard for sulfate.**



**Figure 3-10. Maximum total dissolved solids (TDS) concentrations reported to DPH from wells during the 2000s. Concentrations are in mg/L. 1000 mg/L is the secondary drinking water standard for TDS.**



**Figure 3-11. Maximum iron concentrations reported to DPH from wells during the 2000s.**  
**Concentrations are in µg/L. 300 µg/L is the secondary drinking water standard for iron.**



**Figure 3-12. Maximum manganese concentrations reported to DPH from wells during the 2000s. Concentrations are in µg/L. 50 µg/L is the secondary drinking water standard for manganese.**

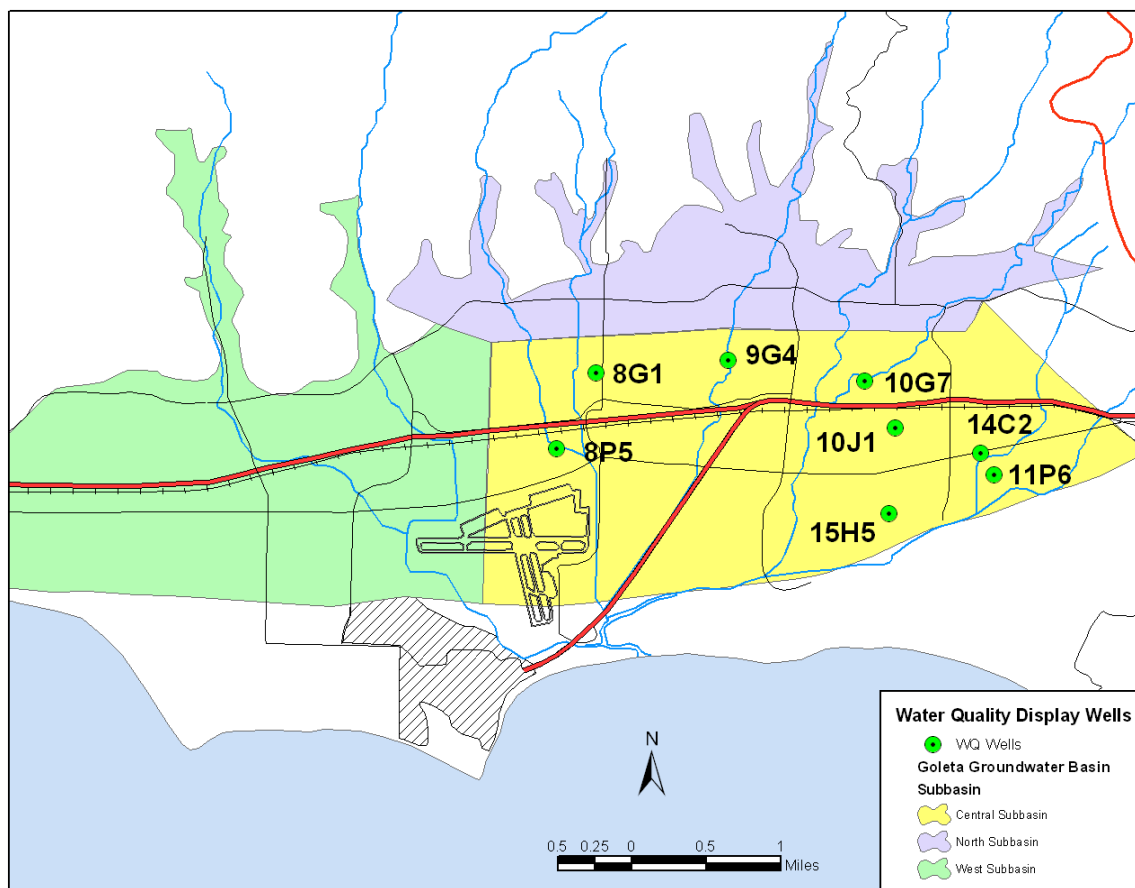
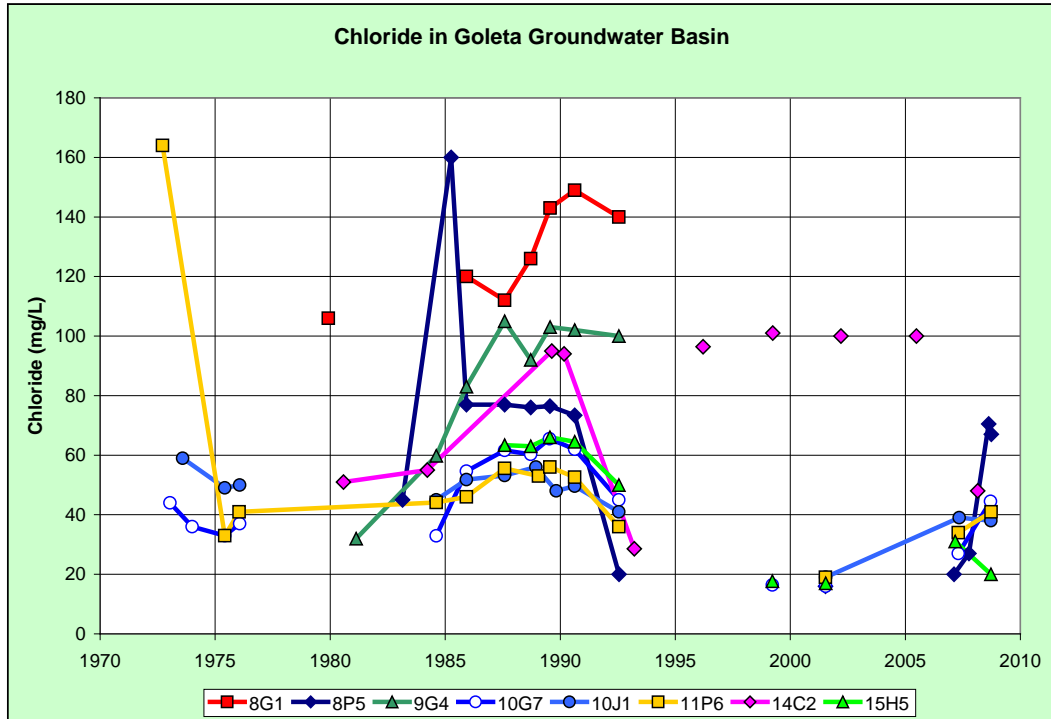


Figure 3-13. Location of wells used in water quality charts.



**Figure 3-14. Chloride in selected wells in Goleta Groundwater Basin. 500 mg/L chloride is a secondary drinking water standard. Agricultural suitability is the primary factor in setting the BMO at 150 mg/L (see section 4.1-*Basin Management Objectives*). Wells located on Figure 3-13. Names of wells: 8G1=GWD “Sherrill”, 8P5=GWD “Airport”, 9G4=GWD “Berkeley #2”, 10G7=GWD “University”, 10J1=GWD “El Camino”, 11P6=GWD “San Marcos”, 14C2=La Cumbre MWC #17, 15H5=GWD “Anita #2”.**

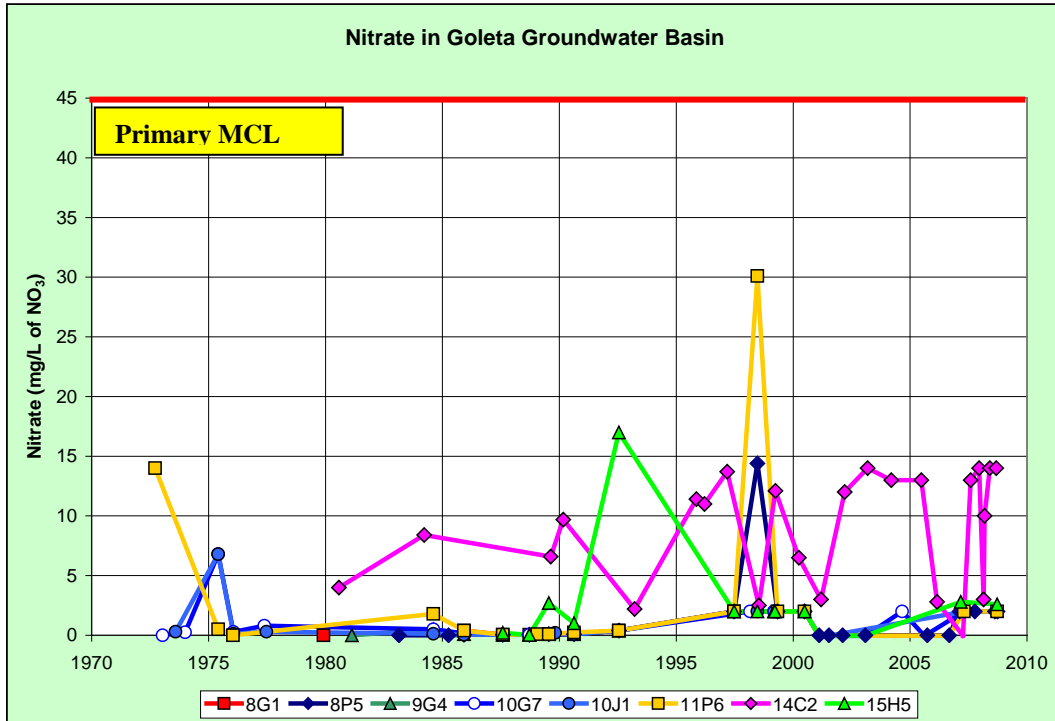


Figure 3-15. Nitrate (as NO<sub>3</sub>) in selected wells in Goleta Groundwater Basin. 45 mg/L of nitrate as NO<sub>3</sub> is a primary drinking water standard. Wells located on Figure 3-13. See Figure 3-14 caption for well names.

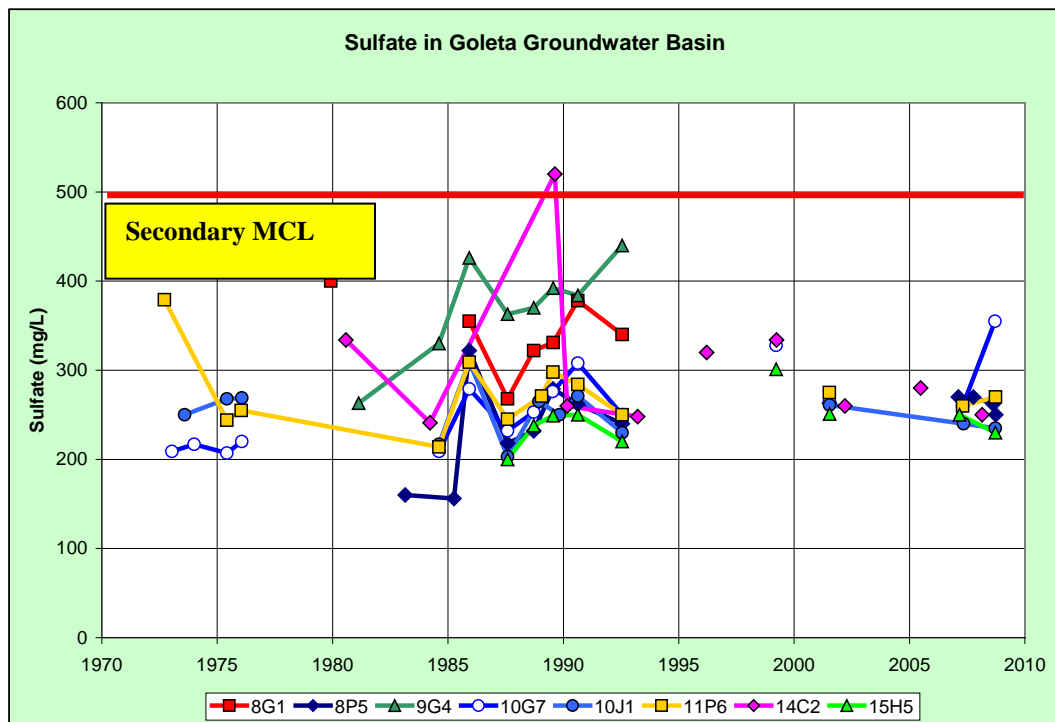


Figure 3-16. Sulfate in selected wells in Goleta Groundwater Basin. 500 mg/L is the secondary drinking water standard for sulfate. Wells located on Figure 3-13. See Figure 3-14 caption for well names.

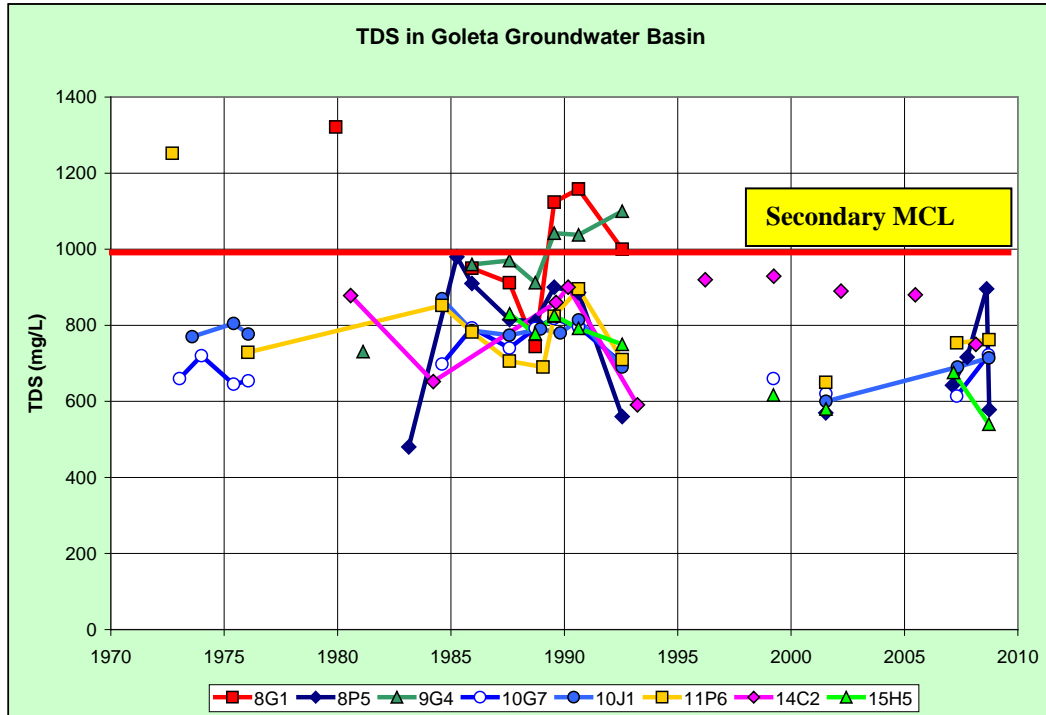


Figure 3-17. Total Dissolved Solids (TDS) in selected wells in Goleta Groundwater Basin. 1000 mg/L is the secondary drinking water standard for TDS. Wells located on Figure 3-13. See Figure 3-14 caption for well names.

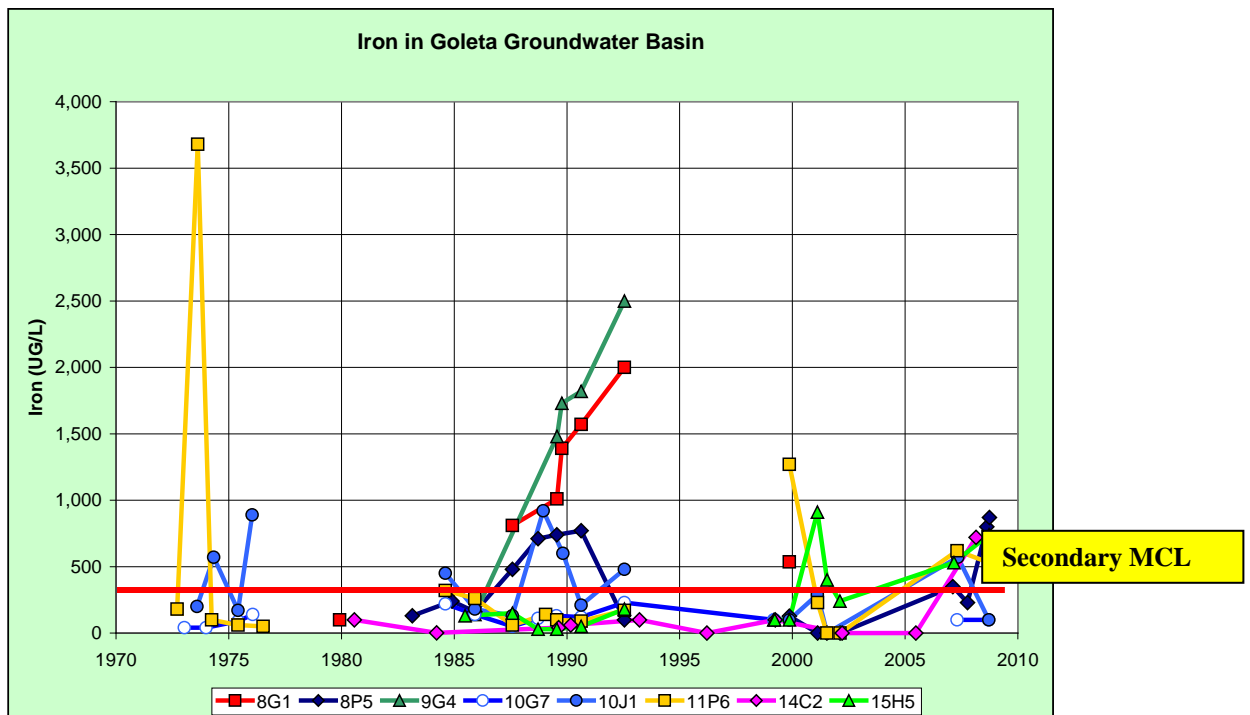
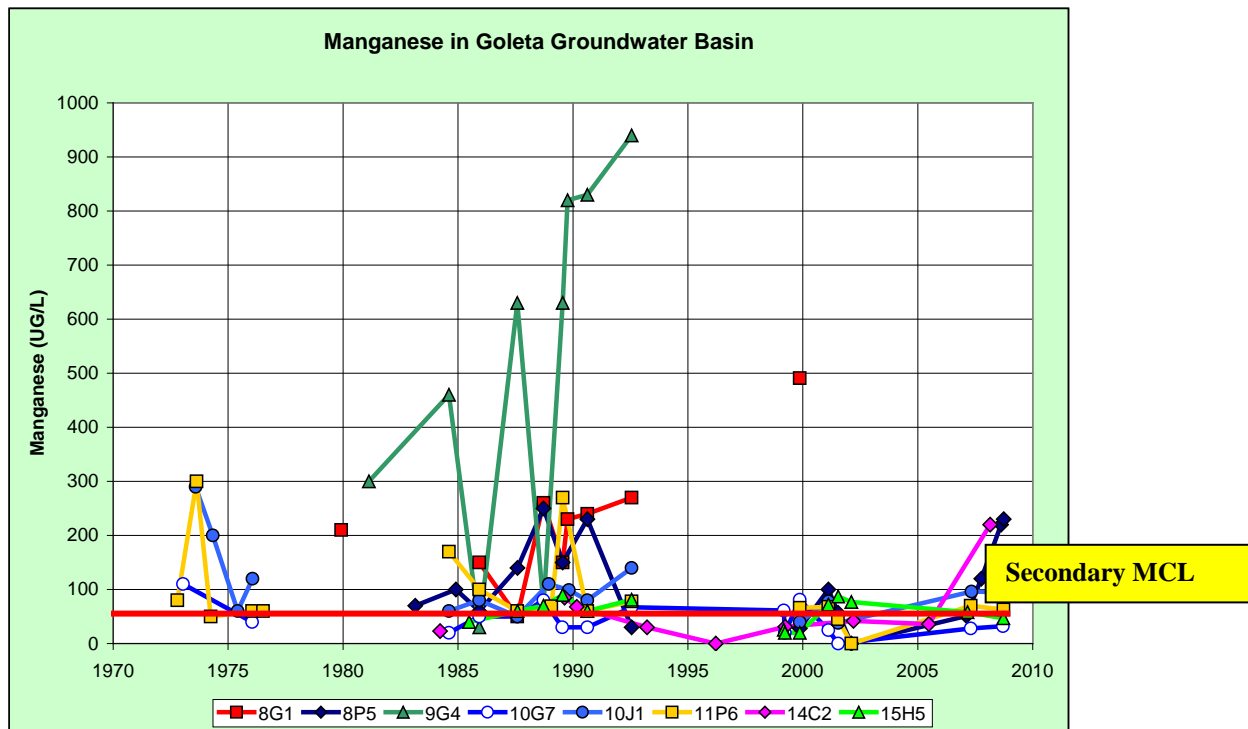
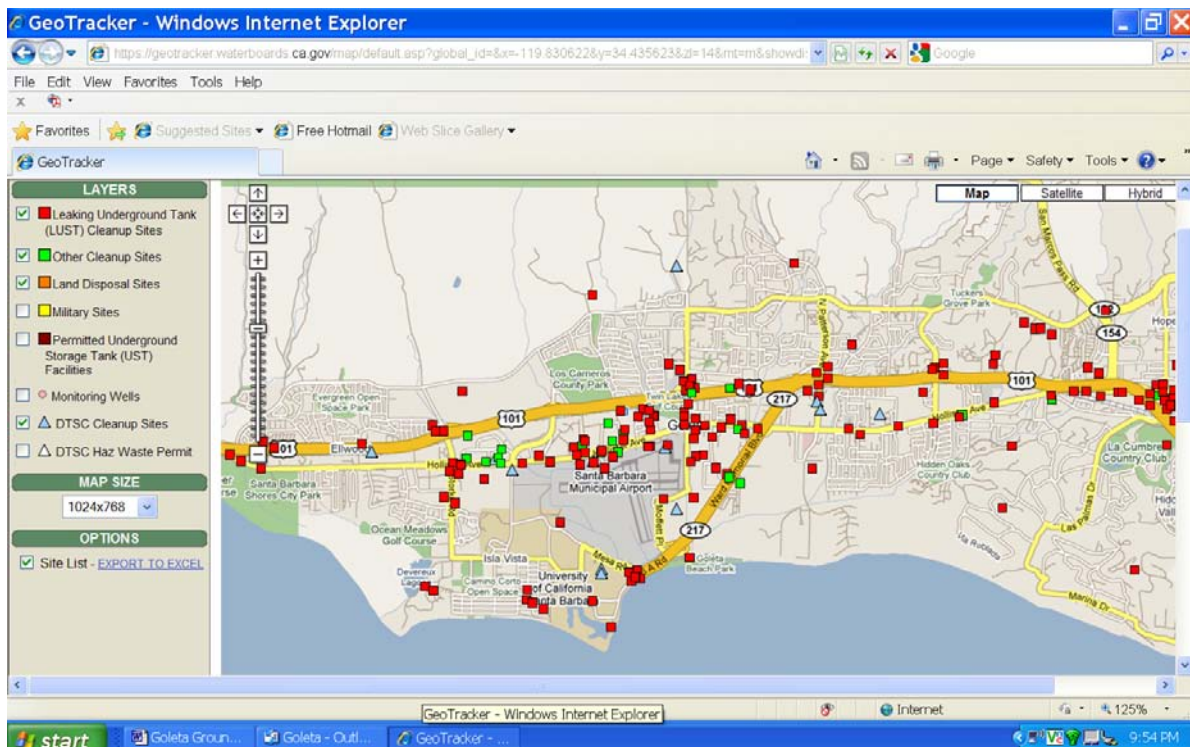


Figure 3-18. Iron in selected wells in Goleta Groundwater Basin. 300 µg/L is the secondary drinking water standard for iron. Wells located on Figure 3-13. See Figure 3-14 caption for well names.



**Figure 3-19. Manganese in selected wells in Goleta Groundwater Basin. 50 µg/L is the secondary drinking water standard for manganese. Wells located on Figure 3-13. See Figure 3-14 caption for well names.**



**Figure 3-20. Location of surface contamination sites in the Goleta Groundwater Basin, from GeoTracker program of the State Water Resources Control Board. Many of the sites are no longer active – they have been remediated and the case closed.**

### 3.2 Groundwater Pumping and Injection

The first wells were drilled in the Goleta Groundwater Basin in about 1890 (Upson, 1951). They were shallow artesian flowing wells, generally less than 100 ft deep. During the early history of groundwater use, there was sufficient piezometric pressure to raise water from a well as much as 30 ft above ground surface (Upson, 1951), but that diminished with time as more wells were drilled and aquifer pressures dropped. Deeper, larger-diameter wells were then drilled, pumps were installed, and groundwater was used to develop fruit and nut orchards. By the late 1930s, various reports estimated groundwater use to be somewhere between 3,000 and 6,000 acre-feet per year, with Upson (1951) reporting average pumping of 4,600 acre-feet per year during the 1930s and 1940s.

As urbanization replaced agriculture, public water producers became a larger factor in the use of groundwater in the Goleta Groundwater Basin. La Cumbre formed in 1925 to serve the developing Hope Ranch area. For close to forty years, groundwater pumping was the sole source of La Cumbre's water supply. GWD first began producing groundwater in 1963, with less than 1,000 acre-feet per year produced before 1970 (GWD, 2008). More-complete records of groundwater extractions began around 1970, with pumping by GWD, La Cumbre MWC, and private parties indicated on Figure 3-21. Overall pumping in the basin peaked in the latter half of the 1980s in the range of 6,000 to 8,000 acre-feet per year. Starting in the 1990s, basin pumping declined dramatically, largely as the result of the Wright Judgment, the SAFE Ordinance, and the end of the drought.

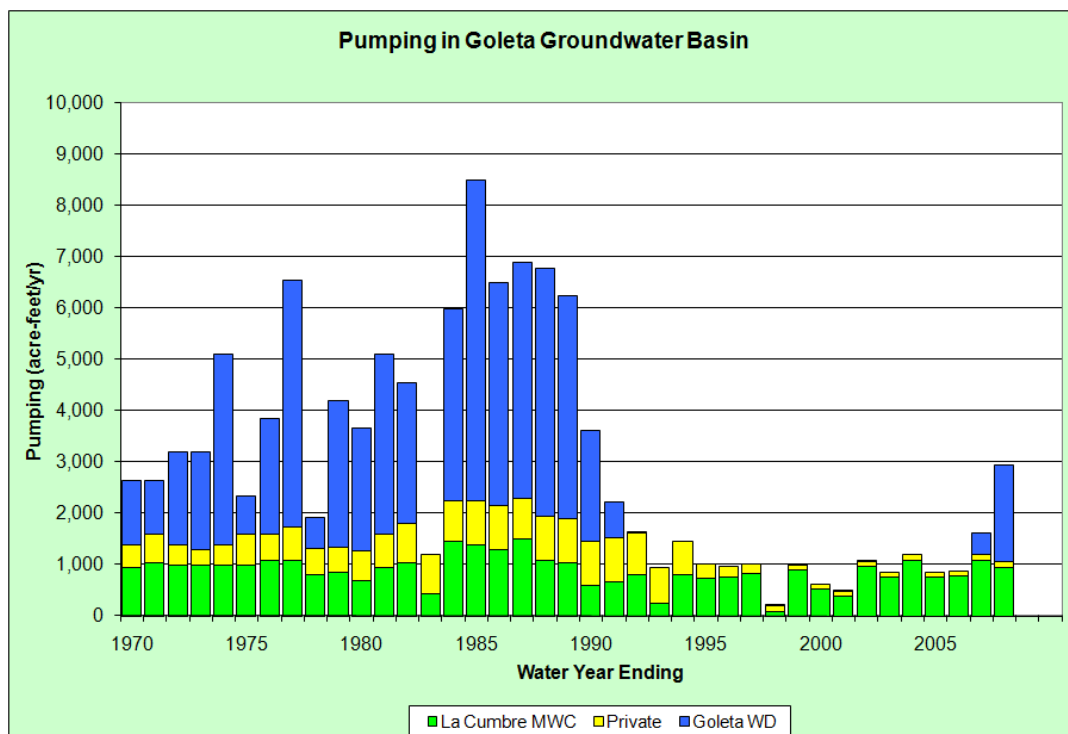


Figure 3-21. Historical pumping in the Goleta Groundwater Basin.

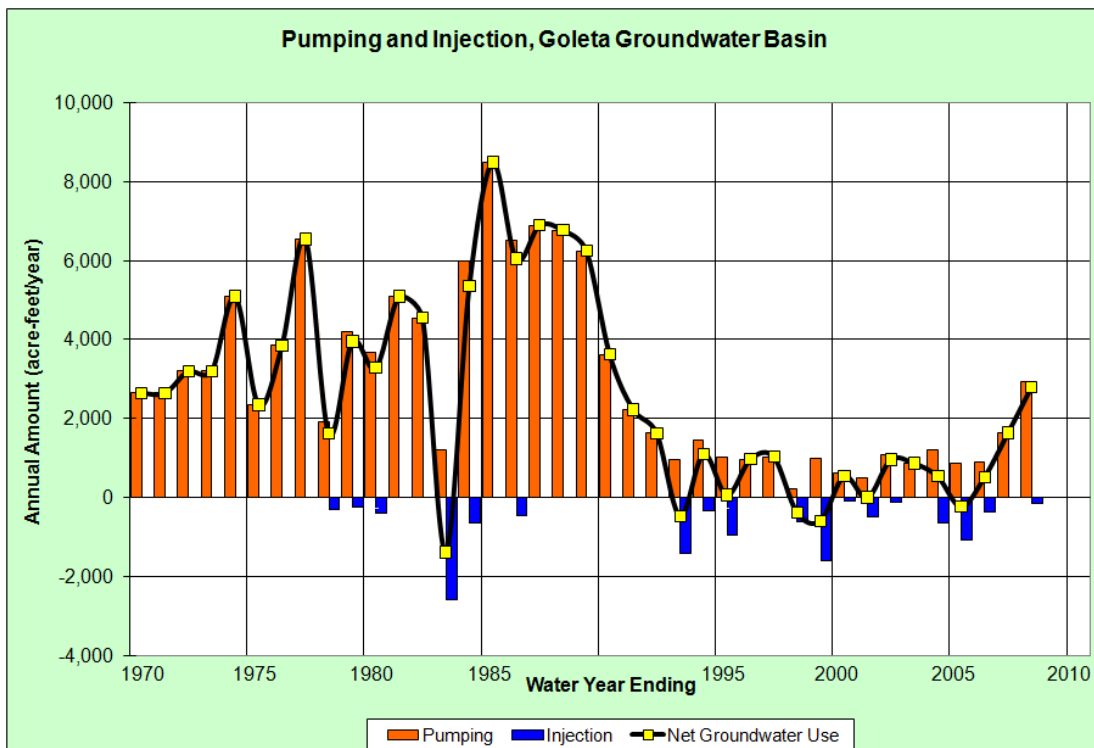


Figure 3-22. Historical pumping and injection in the Goleta Groundwater Basin.

### 3.3 Operation of ASR Project

The Goleta Groundwater Basin was one of the first basins to enhance natural recharge by injecting drinking water into wells. The early injection by GWD was simple – place a fire hose in the well, connect it to a hydrant, and fill the well to near its top, allowing gravity to push the water into the aquifer through the same perforations in the well casing from which water was produced from the aquifer. This injection was initiated in the late 1970s and has been used whenever there are excess surface supplies available in wetter years (Figure 3-22). Over 1,500 acre-feet of water have been injected in a single year in the basin (see section 4.4.1-*Groundwater Storage Programs*).

The source of water injected by GWD is spill water from Lake Cachuma. The GWD’s recent rehabilitation of its well facilities included a special retrofit of its wells for use as dual-purpose injection-extraction wells (commonly referred to as “Aquifer Storage and Recovery,” or “ASR” wells) to maximize injection capacity. These actions were undertaken to maximize conjunctive use potential of the basin and Cachuma Reservoir.

Water that is injected becomes available to be used in dry years when surface water supplies are reduced. In this way the surface and groundwater supplies are used “conjunctively”. Conjunctive use operations allow a more efficient use of both surface and groundwater supplies. Over the last 16 years, the GWD has injected 7,129 acre-feet, or 446 acre-feet per year on an average annual basis.

## 4 Basin Management

### 4.1 Basin Management Objectives

Basin Management Objectives (“BMOs”) are quantitative targets established in a groundwater basin to measure and evaluate the health of the basin. BMOs can be groundwater elevations and/or chemical concentrations in wells. For the Goleta Groundwater Basin, the water level BMOs are set at the lowest measured historical static (non-pumping) groundwater elevation in each BMO well. If groundwater elevations in a BMO well fall below this elevation, the BMO will be considered to have not been met and the basin will be considered to be in distress. This criterion for the water level BMO is based on the observation that a groundwater elevation that low in the well in the past did not harm the basin, but a groundwater elevation below the BMO may create potential undesirable effects.

An additional BMO in the basin is maintaining concentrations of nitrate and chloride at or below levels that are harmful to human health or damaging to irrigated crops. The BMO for nitrate is set at one-half of the drinking water primary standard of 45 mg/L nitrate as  $\text{NO}_3$  (one-half the standard is the level at which increased monitoring and testing is required by the California Department of Health Services for drinking water). Concentrations of nitrate higher than the standard of 45 mg/L can potentially cause Blue-Baby syndrome. A chloride concentration of 150 mg/L or lower is generally protective of irrigated crops, although salt-sensitive crops such as avocado and strawberries may see the beginning of reductions in yield at concentrations slightly lower than that. The BMO wells (Figure 4-1) and criteria (Table 4-1) are listed below.

All of the BMO wells are currently being monitored for water levels twice a year as part of the USGS effort. Only a portion of the BMO wells are currently being regularly monitored for water quality. The addition of these wells to a water quality monitoring network is discussed in section 7.2 Appendix B *Additional Water Quality Monitoring*.

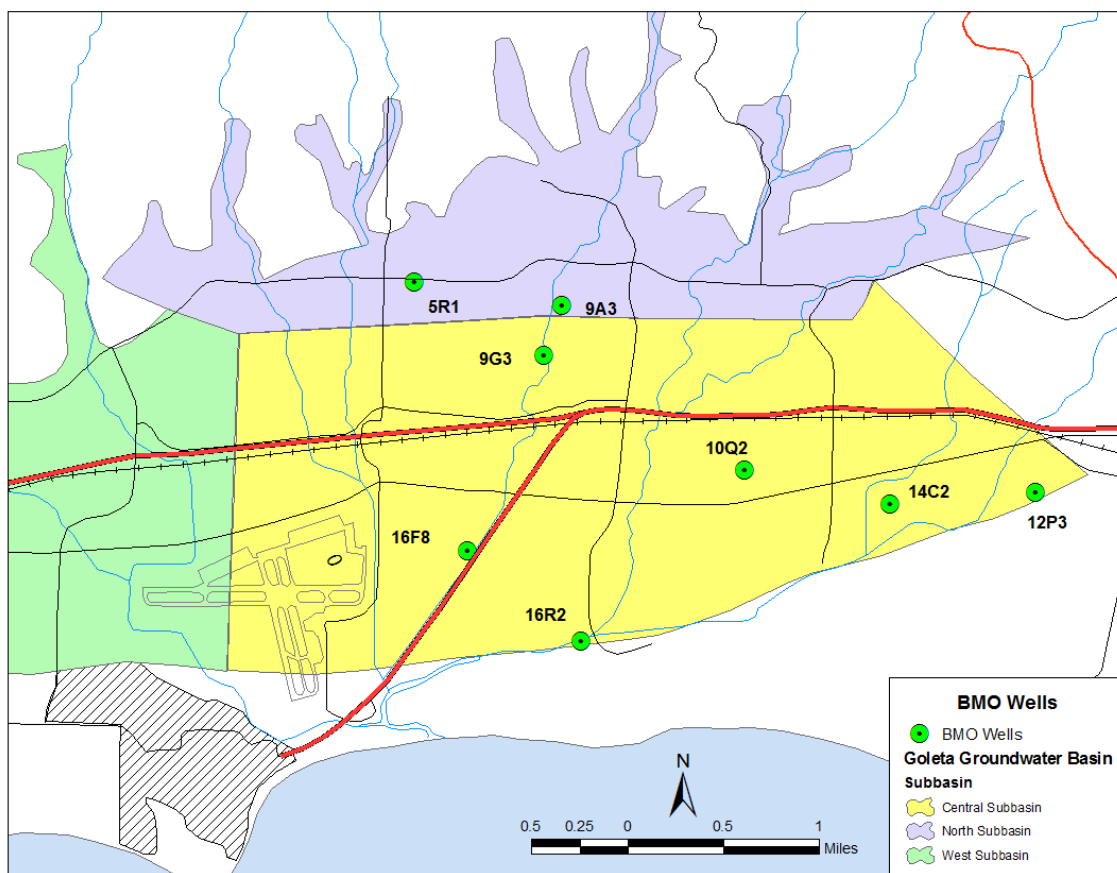


Figure 4-1. Locations of BMO wells.

<i>Well</i>	<i>Subbasin</i>	<i>WLE BMO</i>	<i>Nitrate BMO</i>	<i>Chloride BMO</i>	<i>Current WLE</i>	<i>Current Nitrate</i>	<i>Current Chloride</i>
<b>4N/28W-5R1</b>	North	15'	22.5	150	57'	NM	NM
<b>4N/28W-9A3</b>	North	15'	22.5	150	56'	NM	NM
<b>4N/28W-9G3</b>	Central	-75'	22.5	150	25'	0.4 (9G4)	100 (9G4)
<b>4N/28W-10Q2</b>	Central	-100'	22.5	150	-20'	NM	NM
<b>4N/28W-12P3</b>	Central	-180'	22.5	150	-27'	NM	NM
<b>4N/28W-14C2</b>	Central	-80'	22.5	150	-22'	14	48
<b>4N/28W-16F8</b>	Central	-58'	22.5	150	-10'	NM	NM
<b>4N/28W-16R2</b>	Central	-60'	22.5	150	14'	NM	NM

Table 4-1. BMOs for the Goleta Groundwater Basin. Chemical concentrations are in mg/L, nitrate is reported as NO<sub>3</sub>. NM = no current measurements.

## 4.2 Basin Yield and Storage

The yield of a basin is the critical value in determining the amount of groundwater that can be pumped from a basin over the long term. This pumping is done within the

storage capacity of the basin – if an excess of water is pumped from the storage of the basin, damage could occur to the aquifer, even if recharge eventually refills the basin.

#### **4.2.1 Basin Yield**

Although a basin yield has been proposed for a number of groundwater basins in California, calculating a yield is not an easy task. This can be demonstrated by the lack of technical agreement on basin yield in many of the basin adjudications in California where there are many experts looking at the problem and there are a range of calculations of basin yield. However, the yield of a basin can commonly be bracketed rather than precisely calculated. Basin yield can be expressed as “safe yield” (a term that can have a legal meaning), “perennial yield”, “basin yield”, or a like term. The term is generally defined as:

The yield of a basin is the average quantity of water that can be extracted from an aquifer or groundwater basin over a period of time without causing undesirable results. Undesirable results include permanently lowered groundwater levels, subsidence, degradation of water quality in the aquifer, or decreased stream flow. If water management in the basin changes, the yield of the basin may change. The yield of a basin is the average amount of water that can be pumped annually over the long-term. Pumping in individual years may vary above or below this long-term yield during drought or wet years, or as part of basin management plans. (Bachman and others, 2005)

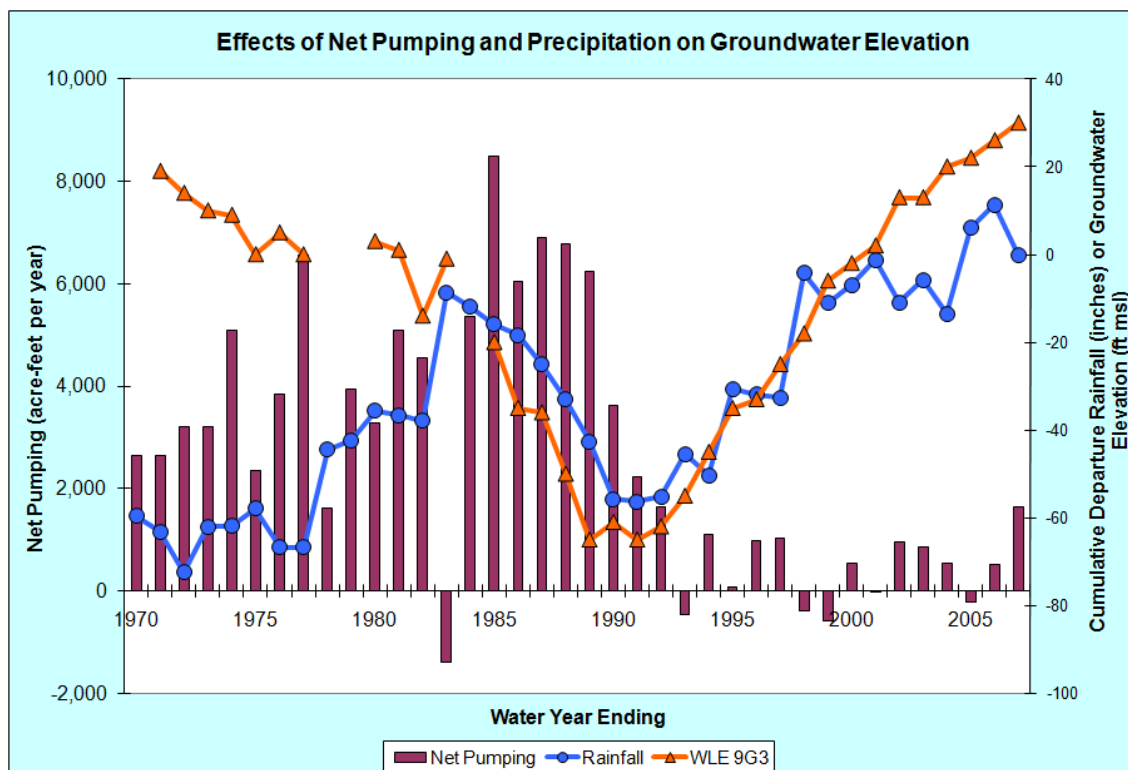
There have been several methods used to calculate the yield of the Goleta Groundwater Basin. Upson (1951) used what is commonly called the “Hill Method” (e.g., Bachman and others, 2005) where the amount of pumping each year is plotted against the change in groundwater elevations caused by that pumping. Theoretically, in a year when there is no net change in groundwater elevation, the amount of pumping in that year is the yield of the basin. Unfortunately, this method assumes that the recharge to the basin from year to year is relatively constant, making it problematic for use in California groundwater basins such as in Goleta. Using this method, Upson (1951) calculated a basin yield of about 2,000 acre-feet per year for the years 1936 to 1950 (he considered the confined areas of the Central subbasin). This period coincides with a long dry climatic cycle (see Figure 2-4) when recharge was below average. Thus, Upson’s number is very likely an underestimation of long-term basin yield.

The optimum situation for estimating basin yield would be if there happened to be a period when groundwater elevations remained unchanged during a period of average precipitation (and, thus, likely to be a period of average recharge). In such a situation, the average pumping over that period is likely to be an approximation of the yield of the basin. To investigate this possibility in the Goleta Groundwater Basin, Figure 4-2 was prepared to show the relationship between net pumping, climatic conditions, and groundwater elevation. The chart plots net pumping as columns, cumulative departure of rainfall (see Figure 2-4) as a line, and the groundwater elevation of well 4N/28W-9G3 as a line. Breaking the chart into distinct periods, several observations can be made:

- During the period 1970 to 1977, rainfall was near average (flat cumulative departure line) but groundwater elevations were dropping. This occurred

when average net pumping was about 3,700 acre-feet per year. This suggests that basin yield is somewhat lower than 3,700 acre-feet per year.

- During the period 1978 to 1982, rainfall was above average but groundwater elevations continued to drop. This occurred when average net pumping was about 3,700 acre-feet per year. This suggests that basin yield is lower than 3,700 acre-feet per year.
- During the period 1984 to 1990, rainfall was below average and groundwater elevations continued to drop. This occurred when average net pumping was about 6,200 acre-feet per year. Nothing can be observed about basin yield.
- During the period 1992 to 2007, recharge and groundwater elevations both went up. This occurred during minimal net pumping. Nothing can be observed about basin yield.



**Figure 4-2. Effects of net pumping (pumping minus injection) and precipitation on groundwater elevation. Rainfall is plotted as cumulative departure of Goleta rainfall. Water level elevation is for the 9G3 well (GWD Berkeley #1) located in the northern portion of the Central subbasin. See text for interpretation.**

Thus, the conclusion drawn from Figure 4-2 is that the yield of the basin is likely somewhat less than 3,700 acre-feet per year. In fact, the Wright Judgment established the safe yield of the basin as 3,410 acre-feet per year, with the perennial yield estimated as

3,700 acre-feet per year<sup>7</sup>. This safe yield number does not include any water stored in the basin by GWD or La Cumbre as a drought buffer.

#### **4.2.2 Basin Storage**

The amount of usable storage in a basin is important in determining how a basin should be operated through wet and dry climatic conditions. The yield of a basin is calculated such that no undesirable effects occur during pumping of the basin. Thus, usable storage in the basin should not be depleted during dry periods to the extent that these undesirable effects occur. An extreme example of this would be a basin with storage of only a few years of pumping, so that all the usable storage would be depleted during a long drought.

Basin storage is generally calculated by estimating how much water could be drained from pore space in the basin's aquifers, down to a certain elevation. Sometimes this lower elevation is set as deep as the top of poor quality water in the aquifers, which may be hundreds to thousands of feet below sea level. However, it is likely that there would be undesirable effects if groundwater was pumped down to that depth, so a storage number calculated in such a manner is not particularly useful in groundwater management. Instead, useable storage can be calculated to reflect how much water can actually be extracted without undesirable effects (it is generally a much lower number).

A typical method of calculating useable storage is to choose a depth to which groundwater can be drained without undesirable effects and multiplying the aquifer volume to that depth by the percentage of drainable pore space in the aquifer ("specific yield"). Specific yield varies by aquifer and area, but is commonly in the range of 10% to 20%.

Historical calculations of usable storage in the Goleta Groundwater Basin have varied somewhat on the assumptions used in the calculation. Toups (1974) estimated the storage at 200,000 acre-feet for the upper 400 feet of saturated sediments, with usable storage between 40,000 and 60,000 acre-feet. Those storage numbers are what are currently being reported in DWR Bulletin 118 (DWR, 2009).

In work done by CH2MHill and used by GWD, usable storage down to historical low water levels was calculated at 30,000 to 60,000 acre-feet (CH2MHill, 2005; GWD, 2008). In addition, there is another 10,000 to 20,000 acre-feet of currently-dewatered aquifer that could be filled (CH2MHill, 2005; GWD, 2008). If the conservative assumption is used that groundwater elevations should not go below historical lows (we know that no undesirable effects occurred at this level), then the total storage that can be worked with is between 40,000 and 80,000 acre-feet. The majority of this storage is in the Central and North subbasins. The current amount of water stored in the basin by GWD and La Cumbre is just over 44,000 acre-feet (see section 4.4.1-*Groundwater Storage Programs*), within the estimated range of useable storage. The amount of manageable storage in the Goleta Groundwater Basin allows flexibility in drought

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<sup>7</sup> The Court in the Wright Judgment defined the perennial yield as including 350 acre-feet per year for the GWD well injection system and 100 acre-feet per year of return flow (applied water that percolates back to the aquifer).

planning. Specific management strategies are discussed in the section 5-*Future Management Strategies*.

### **4.3 Technical Components of the Plan**

There are a number of technical components that can be included in a groundwater management plan<sup>8</sup>. These components include:

1. The control of saline water intrusion.
2. Identification and management of wellhead protection areas and recharge areas.
3. Regulation of the migration of contaminated groundwater.
4. The administration of a well abandonment and well destruction program.
5. Mitigation of conditions of overdraft.
6. Replenishment of groundwater extracted by water producers.
7. Monitoring of groundwater levels and storage.
8. Facilitating conjunctive use operations.
9. Identification of well construction policies.
10. The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling and extraction projects.
11. The development of relationships with state and federal regulatory agencies.
12. The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

Some of these components are under the jurisdiction of other agencies or are not applicable to the Goleta Groundwater Basin. The following components are considered in this Groundwater Management Plan:

- Control of saline intrusion
- Mitigation of overdraft
- Replenishment of groundwater
- Monitoring
- Conjunctive use
- Operation of recharge, storage, water recycling, and extraction projects

These technical components are integrated into a number of management strategies for the basin.

### **4.4 Current Management Strategies**

Management strategies are the methods to implement the Groundwater Management Plan. The discussion of these strategies is divided into two parts – current strategies (this section) and recommended future strategies (section 5 – *Recommended Future Strategies*).

#### **4.4.1 Groundwater Storage Programs**

The current strategy for groundwater storage in the basin follows both the Wright Judgment (for GWD and La Cumbre) and the SAFE Ordinance (for GWD). For both

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<sup>8</sup> California Water Code section 10753.7.

purveyors, the storage strategy has used both in-lieu recharge (using another water source to reduce pumping and letting the basin refill) and direct well injection. GWD has pumped a minimal amount from the basin since the early 1990s, allowing the basin to refill. La Cumbre has pumped below their water right over the past 10 years, also allowing the basin to refill.

GWD has delivered a portion of its Cachuma spill water (water that would otherwise have spilled from the dam during a wet period when Cachuma was full) to La Cumbre for recharge to Goleta's benefit (Table 4-2). This spill water has been used by La Cumbre to offset their own pumping and for direct injection in La Cumbre's wells. Since the beginning of 1999, GWD was required by the Wright Judgment to offer to deliver 20% of Goleta's treated spill water to La Cumbre at GWD's actual cost. If the offer is not accepted, GWD may use La Cumbre's wells for injection of water into the basin. La Cumbre has used their share of this spill water to offset pumping and, most recently, for direct injection (Table 4-3). Total water in storage for GWD and La Cumbre at the end of 2009 was in excess of 44,000 acre-feet.

<i>Year</i>	<i>Water Right (AFY)<sup>9</sup></i>	<i>Pumping (AF)</i>	<i>Injection (AF)<sup>10</sup></i>	<i>Annual Storage (AFY)</i>	<i>Cumulative Storage (AF)</i>
<b>1992</b>	2,023	13		2,010	2,010
<b>1993</b>	2,037		1,422	3,459	5,470
<b>1994</b>	2,051		346	2,397	7,867
<b>1995</b>	2,051		964	3,015	10,882
<b>1996</b>	2,175			2,175	13,054 <sup>11</sup>
<b>1997</b>	2,224			2,224	15,272
<b>1998</b>	2,226	8	600	2,818	18,084
<b>1999</b>	2,226	8	1,595	3,807	21,891
<b>2000</b>	2,226		70	2,290	24,182
<b>2001</b>	2,226	8	405	2,623	26,805
<b>2002</b>	2,226	3	113	2,336	29,141
<b>2003</b>	2,350			2,350	31,492
<b>2004</b>	2,350		658	3,008	34,500
<b>2005</b>	2,350		668	3,018	37,518
<b>2006</b>	2,350		288	2,638	40,156
<b>2007</b>	2,350	438		1,912	42,068
<b>2008</b>	2,350	1,888	334	796	42,864
<b>2009</b>	2,350	1,987	26	389	43,253

**Table 4-2. GWD groundwater storage in Central subbasin (in acre-feet) under the Wright Judgment.**

Calculation of storage under the Wright Judgment uses a different method of calculation for La Cumbre than for GWD. For La Cumbre, a 10-year moving average of pumping is used to allow annual pumping to vary above and below the water right of 1,000 acre-feet per year to accommodate wet and dry periods. In Table 4-3, the water available to pump above the water right is tracked in the 10-Yr Accumulated Unused

<sup>9</sup> Includes increased groundwater rights from both exchanges and augmented service (see Table 1-1).

<sup>10</sup> From GWD annual reports to the Court and other Parties to the Judgment.

<sup>11</sup> Several years have slight deduction for delivery to non-parties.

Water column. In 2009, the 1999 data dropped off the calculation so that only the most recent ten years were used in the calculation. The exception to this is water stored by injection into the aquifer – this storage accumulates until it is pumped back out.

<i>Calendar Year</i>	<i>Water Right</i>	<i>Pumping</i>	<i>Unused Water Right</i>	<i>10-Yr Accumulated Unused Water</i>	<i>Injection Storage</i>	<i>Cumulative Injection Storage</i>
<b>1999</b>	1,000	893	107	107		
<b>2000</b>	1,000	533	467	574	27	27
<b>2001</b>	1,000	394	606	1,180	98	125
<b>2002</b>	1,000	969	31	1,211		125
<b>2003</b>	1,000	765	235	1,446		125
<b>2004</b>	1,000	1,095	-95	1,351		125
<b>2005</b>	1,000	766	234	1,586	424	549
<b>2006</b>	1,000	786	214	1,800	81	631
<b>2007</b>	1,000	1,096	-96	1,704		631
<b>2008</b>	1,000	957	43	1,747	150	781
<b>2009</b>	1,000	953	47	1,687		781

**Table 4-3. La Cumbre water rights and groundwater storage in Central subbasin (in acre-feet). La Cumbre was first allowed by the Wright Judgment to store water in 1999. Pumping can vary annually as long as the average of the most recent ten years does not exceed 1,000 acre-feet per year. 2009 was the first year where the moving average dropped a year, 1999, as the ten-year average was calculated using years 2000-2009.**

The SAFE Ordinance, which applies only to GWD, provides for the creation of a Drought Buffer of water stored in the Goleta groundwater basin to protect against future drought emergencies. When groundwater elevations are below 1972 levels (interpreted in this Plan as the average of the Index Wells in any year being below the average in 1972), SAFE specifies that a certain amount of water must be committed to be recharged to the basin during each year (see section 1.3 – *SAFE Ordinance (GWD)*). The amount of water required to be stored annually under these conditions is GWD’s basic water right (2,000 acre-feet per year) plus  $\frac{2}{3}$  of the amount of any new service (Table 4-4). SAFE specifies that any State Water delivered to GWD in excess of 3,800 acre-feet per year must be recharged to the basin. The annual storage commitment and State Water delivery to recharge are not required to be made in any year when groundwater elevations are above 1972 levels (Table 4-5).

The Wright Judgment and the SAFE Ordinance interact to a degree (for GWD), which is discussed further in section 5.6 – *Interaction of Wright Judgment and SAFE Ordinance*.

<i>Year</i>	<i>Base Annual Storage Commitment (AFY)</i>	<i>New Service (AF)</i>	<i>New Service Storage Commitment (AFY)<sup>12</sup></i>	<i>Annual Storage Commitment (AFY)<sup>13</sup></i>
<b>1997</b>	2,000	165	110	2,110
<b>1998</b>	2,000	96	64	2,174
<b>1999</b>	2,000	13	9	2,183
<b>2000</b>	2,000	21	14	2,197
<b>2001</b>	2,000	33	22	2,219
<b>2002</b>	2,000	31	21	2,240
<b>2003</b>	2,000	11	8	2,248
<b>2004</b>	2,000	24	16	2,263
<b>2005</b>	2,000	45	30	2,294
<b>2006</b>	2,000	26	17	2,311
<b>2007</b>	2,000	77	51	2,362
<b>2008</b>	2,000	9	6	2,368
<b>2009</b>	2,000	7	5	2,373

**Table 4-4. GWD required annual commitment to storage under the SAFE Ordinance. The storage requirement for new service is additive of previous storage requirements because the new demand is present in subsequent years and must be protected using the Drought Buffer.**

<sup>12</sup>  $\frac{2}{3}$  of the New Service demand is added to the Base Contribution.

<sup>13</sup> The Annual Storage Contribution is calculated each year. It is only required to be contributed when groundwater elevations are below 1972 levels. Note that calculations have been rounded so additions of columns may appear to be erroneous (but they aren't).

<i>Year</i>	<i>Annual Storage Commitment Calculation (AFY)</i>	<i>Required Annual Storage Commitment (AFY)<sup>14</sup></i>	<i>Water Stored Under Commitment (AFY)</i>	<i>Annual Commitment Outstanding (AF)</i>
<b>1997</b>	2,110	2,110	2,110	0
<b>1998</b>	2,174	2,174	2,174	0
<b>1999</b>	2,183	2,183	2,183	0
<b>2000</b>	2,197	2,197	2,197	0
<b>2001</b>	2,219	2,219	2,219	0
<b>2002</b>	2,240	2,240	2,240	0
<b>2003</b>	2,248	2,248	2,248	0
<b>2004</b>	2,263	2,263	2,263	0
<b>2005</b>	2,294	0	0	0
<b>2006</b>	2,311	0	0	0
<b>2007</b>	2,362	0	0	0
<b>2008</b>	2,368	0	0	0
<b>2009</b>	2,373	0	0	0

**Table 4-5. GWD required annual storage commitment under SAFE, indicating actual recharge and any outstanding commitment that has not yet been recharged. GWD has satisfied all required storage commitments through 2009. No contribution has been required since 2004 because groundwater elevations have been above 1972 levels.**

There are limits to how much the basin can continue to be filled. Available unused storage in the basin as of 2008 has been calculated to range from 10,000 to 20,000 acre-feet (see section 4.2.2-*Basin Storage*). That remaining storage could be filled in less than a decade if there was no intervening drought. It is not clear what unintended consequences would occur if the basin was filled to levels unseen in decades; possible consequences could be reactivation of springs, flooding of foundations and shallow excavations, unwanted flow from wells that are not equipped to withstand artesian conditions, leaking of abandoned wells that were improperly destroyed, and interference with groundwater cleanup operations.

#### **4.4.2 Groundwater Pumping**

The current strategy for pumping in the basin is to stay within water rights determined by the Wright Judgment, allow the basin to recover by reducing pumping when possible, and store un-pumped groundwater for a drought or some other water contingency. GWD is currently pumping groundwater for just such a contingency, to dilute water from Lake Cachuma that has increased organic matter and subsequently higher disinfection byproducts caused by erosion in the Cachuma watershed burned in the Zaca fire.

La Cumbre has pumped groundwater somewhat below their water right over the last decade (Table 4-3), whereas GWD's pumping has been reduced to a minimum since the early 1990s to allow the basin to refill (Table 4-2). As a result of the reduced pumping,

<sup>14</sup> After 2004, GWD Board determined that groundwater elevations were above 1972 levels, so no Annual Commitment was required.

groundwater elevations in much of the Central subbasin have been rising for years. Near-surface elevations in the West subbasin may also be related to this reduced pumping. Current pumping strategies do not address the long-term management of these groundwater elevations.

In the eastern portion of the Central subbasin, where groundwater elevations are lower than elsewhere in the subbasin (Figure 2-2), La Cumbre pumping balances water quality concerns against costs – groundwater is less expensive than State Water, but the surface water (State Water flows through Cachuma reservoir during delivery) is usually better quality.

#### **4.4.3 Groundwater Monitoring**

The existing regional groundwater level monitoring program, conducted by the U.S. Geological Survey and contracted by GWD, consists of collecting manual measurements of water levels in 47 basin wells twice a year: 35 wells in the Central subbasin, 6 in the North subbasin, and 4 in the West subbasin. A few of these wells are close to purveyors' wells, limiting their usefulness when the supply wells are being pumped. The monitoring is currently conducted in June and December of each year. The location and elevation of the wells were surveyed in 2008. These wells, along with their construction details, have been entered into a Geographic Information System (GIS) database as part of preparing this Plan. Groundwater elevation records, including historic records as far back as the 1920s, are in digital form.

In addition, purveyors' wells are commonly fitted with pressure transducers as part of their automated SCADA system; water levels measured by the transducers are preserved digitally. GWD is currently placing several pressure transducers in additional wells.

Regional groundwater quality is not currently regularly monitored outside of the purveyors' required drinking water monitoring. Historical water quality data is more complete (e.g., compare Figure 3-1 to Figure 3-7). Both historic and current water quality data have been entered into a digital database as part of preparing this Plan.

#### **4.4.4 Groundwater Modeling**

A groundwater flow model has been constructed for the Goleta Groundwater Basin (CH2MHill, 2009b). The model calculates groundwater elevations through time that would result from changes in pumping. As currently constructed, the model can be used to determine future well locations in the Central basin.

#### **4.4.5 Wellhead Protection**

A Drinking Water Source Assessment is required by the California Department of Public Health (DPH) for each of the purveyors' public water supply wells. Purveyors were given the option of doing the Assessment themselves or having DPH do the Assessment. In the Goleta Groundwater Basin, DPH conducted the Assessments for the purveyors. They are on file with DPH and the purveyors. The Assessment evaluates the contamination potential for the aquifers from overlying uses ranging from leaking gasoline tanks to concentrated farm animals. Most of the purveyors' wells are relatively

well protected because water is produced from confined aquifers, where low-transmissive beds such as clays separate surface contamination sources from the deeper aquifers.

#### **4.4.6 Cooperation with Other Agencies**

South Coast water agencies belong to regional water organizations, depending upon their sources of water. GWD is a member of the Cachuma Operations and Maintenance Board (COMB) and Cachuma Conservation Release Board (CCRB) along with the other agencies who receive water from Lake Cachuma. GWD and La Cumbre are member and associate member agencies, respectively, of the Central Coast Water Authority (CCWA), their State Water contractor. GWD and La Cumbre coordinate as needed with the City of Santa Barbara on issues related to water delivery and interties.

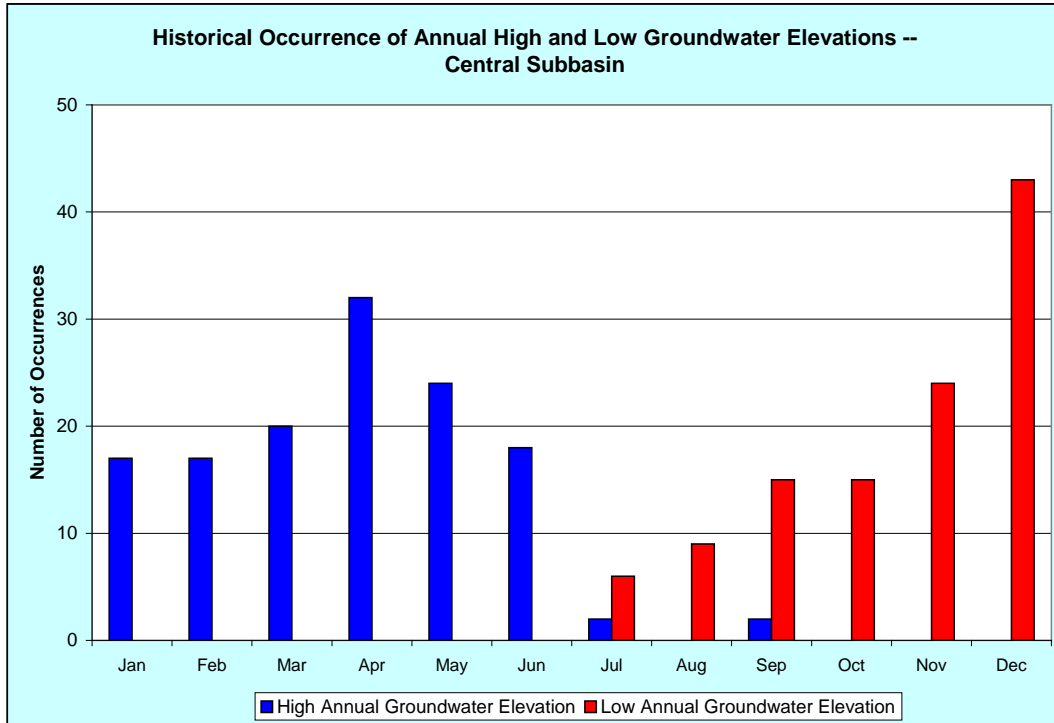
## **5 Recommended Future Strategies**

### ***5.1 Semi-Annual Monitoring of Groundwater Elevations***

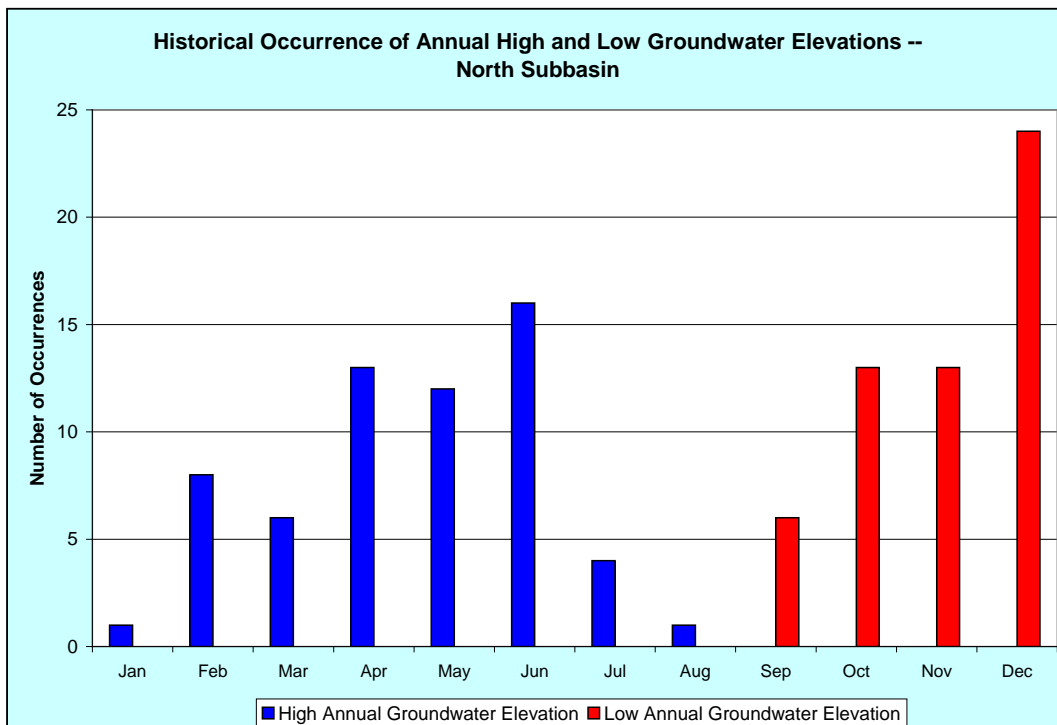
The semi-annual monitoring conducted by the U.S. Geological Survey (under contract to GWD) is an essential element of basin monitoring. Semi-annual monitoring is generally designed so that annual high and low groundwater elevations in the basin are determined. Current monitoring occurs in the months of June and December.

To evaluate whether June and December are the optimum monitoring months to detect annual high and low groundwater levels, both historical groundwater measurements and automated measurements from GWD's production wells (SCADA data) were analyzed. Using all the available historical water level data for which there are at least 6 measurements per year in a single well (this happened prior to the current USGS monitoring of twice a year), Figure 5-1 shows the months in which the high and low groundwater levels were measured for each year. The month in which wells in the Central subbasin recorded the largest frequency of high water levels was April, whereas the month with the most low water levels was December. There is a significant variation from year to year in the month in which high and low groundwater levels were recorded, likely reflecting annual differences in rainfall timing and magnitude, the lag time for recharge to reach individual wells, and local pumping patterns.

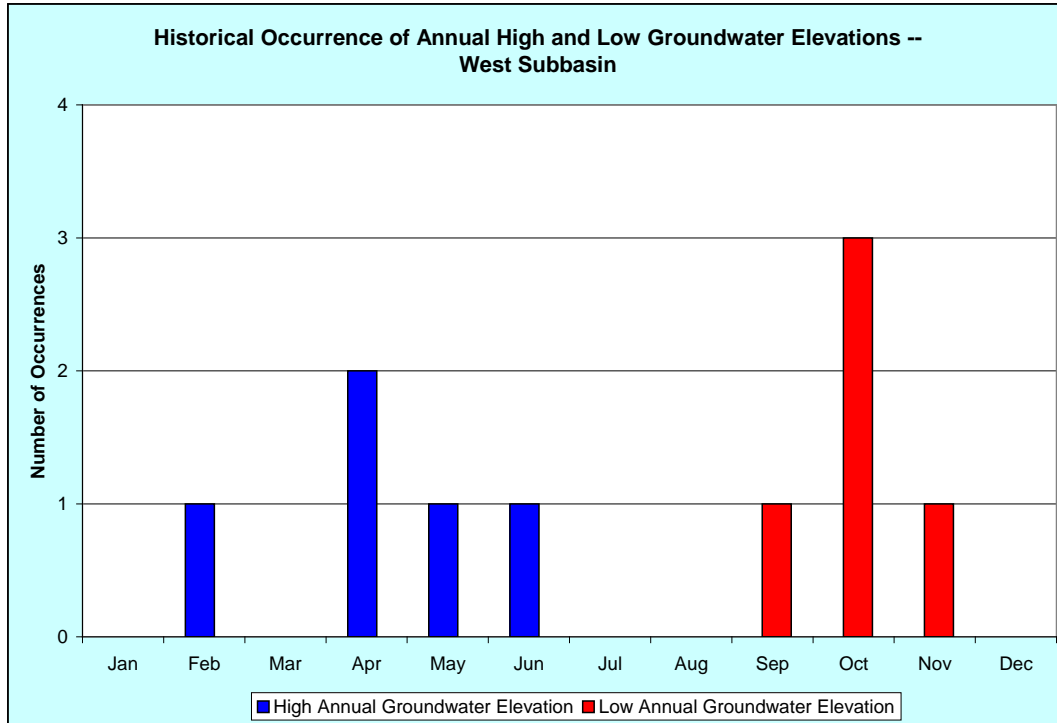
A similar analysis of historical water level records in the North and West subbasins (Figure 5-2 and Figure 5-3) yielded somewhat different results. In the North subbasin, highs and lows were in June and December, respectively. In the West subbasin, highs and lows were in April and October, although the number of samples was relatively small.



**Figure 5-1. Months in which annual high and low groundwater elevations occurred, based on historical measurements from the Goleta Central subbasin.**

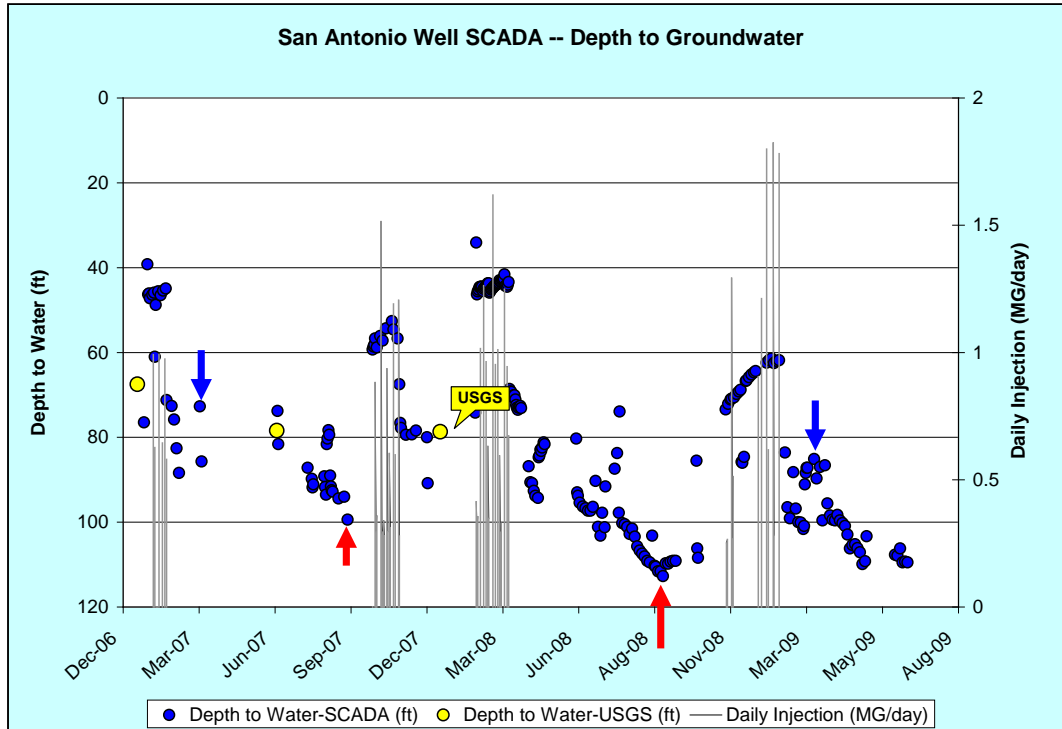


**Figure 5-2. Months in which annual high and low groundwater elevations occurred, based on historical measurements from the Goleta North subbasin.**



**Figure 5-3. Months in which annual high and low groundwater elevations occurred, based on historical measurements from the Goleta West subbasin.**

The historical record of high-frequency measurements of groundwater elevations in the Goleta Groundwater Basin is biased towards the 1970s and 1980s. To determine the timing of current high and low groundwater levels, data from GWD's automated measurements in producing wells (SCADA system) were used (Figure 5-4). The SCADA results indicate both depth to water in the well and the current rate of pumping. Using non-pumping water levels from the San Antonio well and discounting the periods of injection, high annual water levels occurred in March (blue arrows) and low annual water levels occur in August and September (red arrows). The measurements vary considerably over a short period of time because the pump is turning off and on, and some of the measured water levels have not recovered fully from a pumping cycle.



**Figure 5-4. Automated depth to water measurements in GWD’s San Antonio producing well from SCADA records. Water levels shown are for periods when the well was not pumping (but may still be affected by pumping). Blue arrows indicate annual high in groundwater elevations and red arrows indicate annual low. Manual measurements made by the U.S. Geological Survey are also shown.**

There is a clear difference in the timing of annual high and low groundwater elevations between historical measurements and current automated measurements. Given the uncertainty in using data from a well that is pumping much of the time, it is recommended that the historical data be used as the basis for determining the months to monitor groundwater elevations. Thus, monitoring should take place in April and December. When information from the additional transducers is obtained (see below), this schedule can be modified as needed. This change in monitoring schedule should not affect comparisons to 1972 groundwater elevations (as part of the SAFE Ordinance) because 1972 measurements were largely conducted on a once-a-month schedule.

When the April and December water levels are measured, it is important to ensure that the measured well (if it is a pumping well) and nearby wells have not been pumped during the previous 12 hours or so. The SCADA data from GWD producing wells indicate that it takes about 10 hours in these wells for groundwater levels to recover (equilibrate to a constant level) after a pumping cycle is completed.

## 5.2 Additional Monitoring Points

There has been a recommendation to increase the number of monitoring points in the southeastern portion of the Central subbasin, where basin water levels are lowest, by adding as many as four additional monitoring wells (CH2MHill, 2009a). As shown on

Figure 2-2, there are few monitoring points in this area. It is recommended that at least two existing wells in this area be considered for water level monitoring. An additional monitoring point should be considered as a new dedicated monitoring site, with nested wells each of which are completed (perforated) at different depths in the aquifer (a typical nested monitoring site). Such a nested monitoring site provides different information than a production well, which is typically completed (open to the aquifer) over a large depth interval. A multiple completion monitoring well gives specific information at different depths, which helps define the complexity of the aquifers, vertical groundwater gradients, and water quality at different depths. In many California basins, multiple completion wells have provided information that has changed basin management strategies.

It is also recommended that a multiple completion monitoring well be installed near the Goleta slough area. This well would serve as a sentinel for detecting seawater intrusion, whether from leakage across the More Ranch Fault or downward migration from surface waters.

### **5.3 Monitoring of Groundwater Quality**

Water quality degradation is particularly problematic, because it is difficult to reverse and could require treatment of pumped groundwater. Water quality monitoring of groundwater appears to have been reduced over the past two decades. Although there does not appear to be any current threat of widespread water quality degradation, it is only with systematic monitoring that there is assurance that this continues.

Two steps are recommended to make water quality monitoring more robust. First, water quality sampling results from purveyors' wells should be obtained from the California Department of Public Health (DPH) every two years and added to the water quality database that was created in preparing this Plan. DPH keeps digital records for all water quality sampling of public water supply wells and provides these files upon request. Second, approximately ten additional water quality monitoring sites should be added using the dedicated monitoring wells and a sampling of private wells to create a geographic distribution of monitoring sites (potential wells are listed in section 7.2 *Appendix B – Additional Water Quality Wells*). It is recommended that water quality sampling be conducted every two years, with analyses of the typical general mineral suite. The recommended multiple-completion monitoring well near the Goleta slough should be sampled annually. When water quality results are received, they should be entered in the database and analyzed for changes. If there is significant deterioration in water quality in any of the wells being monitored, then the sampling frequency for that well should be increased.

### **5.4 Determination of 1972 Conditions for SAFE Ordinance**

A groundwater management consideration for GWD is compliance with the District's SAFE Ordinance that sets 1972 groundwater levels in the Central subbasin as the baseline for determining a drought buffer (see section 1.3-*SAFE Ordinance*). The method for determining "1972 water levels" was not specified. Possible options include:

**Method 1:** All wells in the Central subbasin for which there was a water level measured in 1972 must remain higher than that level. This method does not allow any flexibility in groundwater management. For instance, if a new well was drilled in a different part of the basin to relieve pumping stress elsewhere in an area with low water levels, pumping of the new well could lower water levels below the 1972 level in the new area, which would trigger the SAFE Ordinance even if the strategy was best for the basin. In fact, this method could exacerbate undesirable effects in the basin by rigidly enforcing the pumping patterns of 1972; it is not recommended.

**Method 2:** Water levels measured in 1972 are used to calculate the amount of water that was in storage in 1972 in the Central subbasin. This storage volume would then be compared to the current amount of water in storage. In theory, this would be the most appropriate method, but it is problematic. As discussed in section 4.2.2-*Basin Storage*, there is a large range in aquifer properties, yielding a storage calculation with a large range. In addition, if changing groundwater elevations in wells are used to calculate changes in storage in the basin, the errors can be orders of magnitude in size depending upon whether the groundwater elevations were measured in confined or unconfined portions of the aquifers. Thus, this method is not recommended at this time.

**Method 3:** Water levels measured in 1972 are used together to create an average 1972 water level in the Central subbasin. Current average water levels from the same set of wells are used to compute a current average water level. This method requires that the same wells be used in 1972 and today. There are sufficient wells that meet the criterion of having 1972 measurements and current measurements. There is a choice of simply using all the wells that meet the criterion or using a subset of the wells that give an even geographic distribution. It is recommended that an even geographic distribution of wells be used.

Method 3, recommended here, is used in the two adjudicated basins closest to the Goleta Groundwater Basin. In the Santa Paula basin (Ventura County), a set of seven Key Wells are used to indicate the trend in overall groundwater elevations in the basin. In the Nipomo Mesa Management Area portion of the Santa Maria basin (Santa Barbara and San Luis Obispo counties), the average water level from a set of eight wells comprise the Key Wells Index which triggers various management events in the basin.

A consideration in determining 1972 groundwater levels is the time of year of the measurement. 1972 groundwater levels vary by more than 10 feet from the wet to the dry portion of the year. It is recommended that winter-spring groundwater elevations be used to determine average groundwater elevations. During this time, groundwater pumping is at its smallest and it is more likely that measurements represent static water levels (rather than pumping water levels) in the basin. In 1972, high groundwater elevations were generally reached in February or March. The recommended monitoring program in the basin would measure groundwater elevations in April and December (see section 5.1-*Semi-Annual Monitoring of Groundwater Elevations*), but current monitoring is conducted in June and December. For accuracy, similar months should be compared. Thus, in determining groundwater conditions for the SAFE Ordinance, June 1972 measurements should be compared to June measurements in subsequent years. This

should be considered an interim comparison – when new April measurements become available in the future, then the comparison should be between April 1972 levels and April levels in subsequent years.

The U.S. Geological Survey considered criteria for selecting wells for comparison to 1972 groundwater elevations (Kaehler and others, 1997). The criteria chosen by the USGS for selection of wells were, in approximate order of importance: (1) the well is completed in the Santa Barbara Formation or younger deposits; (2) the well is located in the Central subbasin; (3) the well has water-level data for calendar year 1972; (4) the well is currently measurable; (5) water level measurements were made when the well was not being pumped; (6) the well has perforated intervals similar to those of a well measured in 1972 that was later destroyed, inaccessible, or could not be located; and (7) the wells that are selected provide a broad areal distribution of wells within the Central subbasin.

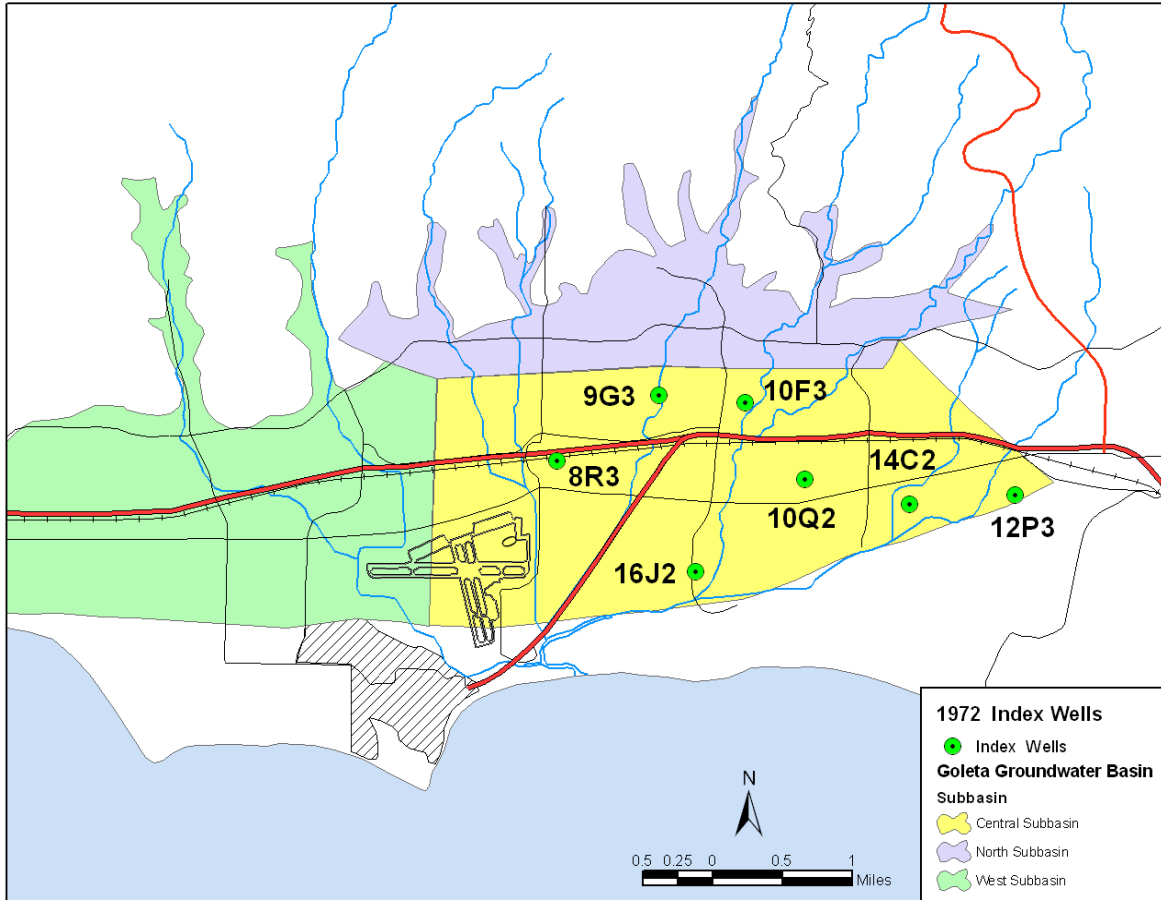
The USGS chose 17 wells at 15 sites for their 1972 comparison. Substitute wells were included among the selected wells – meaning that some wells were used that had not yet been drilled in 1972, but were used as a surrogate for a nearby 1972 well that was no longer measurable. Some of the wells chosen by the USGS were problematic (Kaehler and others, 1997), being at more than 100 feet higher elevation than all other wells or being too close to faults. Equal geographic distribution was not achieved throughout the basin, especially in the important southeastern portion of the Central subbasin. There was an average drop in groundwater elevations of almost 22 feet from 1972 to 1996 at the 15 sites.

For this Plan, a more-even geographic distribution was sought. A total of 14 wells were available in the Central subbasin which had monthly water level measurements in 1972 and are currently being monitored. A discussion of how these wells were culled to seven Index Wells is included in the Appendix. Seven wells were chosen as Index Wells based on varied construction data, geographic distribution, and completeness of the historical record between 1972 and today (Figure 5-5, Table 5-1). All of the Index Wells have monthly water level measurements in 1972, allowing a comparison with current conditions for either the month of June (interim comparison) or the month of April (recommended future spring measurements). These wells vary in their depth completions, so they likely represent a composite of groundwater conditions in the main producing zones in the basin. Because the SAFE Ordinance targeted the basin as a whole rather than a specific aquifer, this approach is consistent with the intent of SAFE.

Groundwater elevations for the seven Index Wells were used to construct a historical record for groundwater elevations in June of each year (Figure 5-6). The annual value of the Index was calculated by averaging the groundwater elevations for that June in each of the wells. Gaps appear in the historical Index when at least one of the Index Wells had no reported measurements of groundwater levels. Figure 5-6 indicates that the Index rose above the 1972 value starting in 2002, and is currently more than 20 feet above the 1972 Index.

It is also helpful to know the low point in the Index during the low groundwater elevations in the drought of the late 1980s and early 1990s. To determine this, the Index was extended by reconstructing data in the missing years. To approximate a missing groundwater elevation measurement in a particular well, groundwater elevations in that

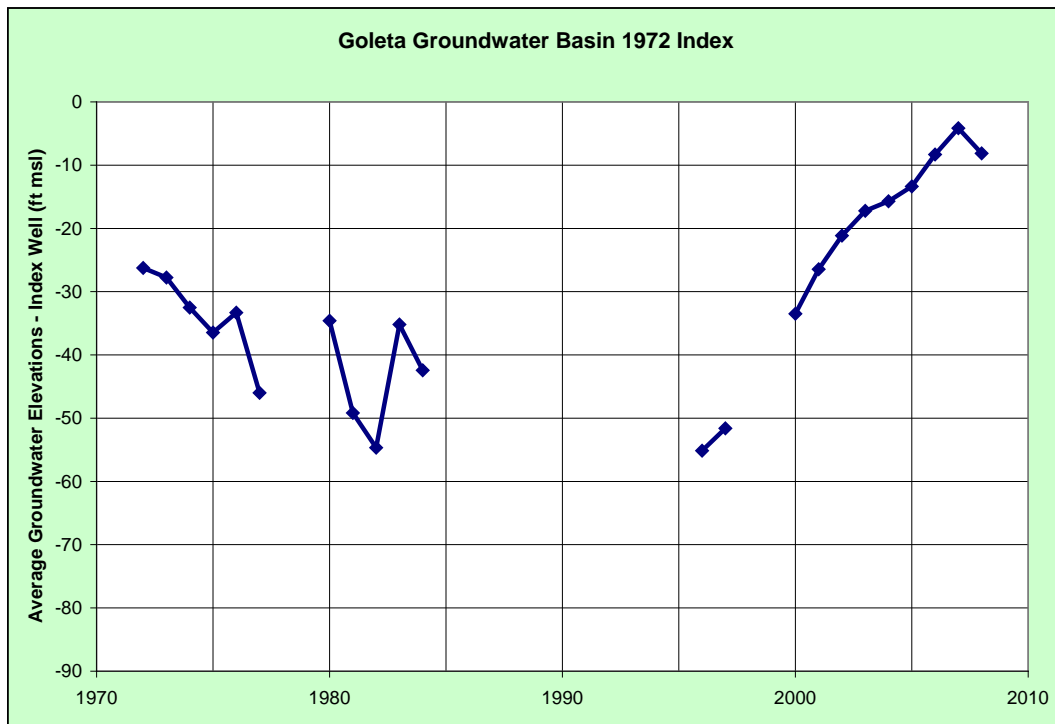
well and nearby wells with no missing measurements were cross-correlated for the periods when there were measurements in both wells. The resulting correlation was used to calculate the June groundwater elevation in the unmeasured well. This cross-correlation method is explained in more detail in the Appendix. The results of this reconstruction are shown on Figure 5-7. Figure 5-7 indicates that the low Index value occurred in 1989, with an Index value of -85 feet.



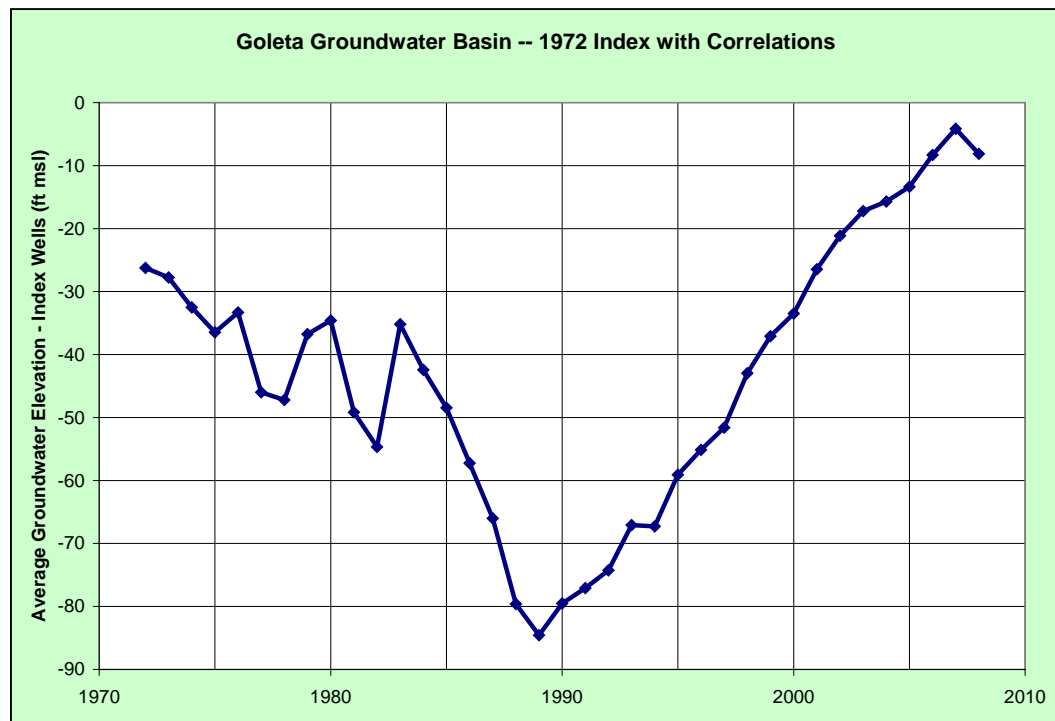
**Figure 5-5. Location of Index Wells for determination of SAFE Ordinance 1972 groundwater elevations.**

<i>Well Number</i>	<i>Name</i>	<i>Depth</i>	<i>Perforations</i>	<i>Years of Record</i>
<b>04N28W08R03</b>	Magnolia	106'	N/A	1941-current
<b>04N28W09G03</b>	GWD Berkeley #1	288'	168'-288'	1964-current
<b>04N28W10F03</b>	GWD Barquero	300'	150'-300'	1970-current
<b>04N28W10Q02</b>	Emmons	278'	62'-278'	1922-current
<b>04N28W12P03</b>	La Cumbre MWC #7	626'	115'-626'	1947-current
<b>04N28W14C02</b>	La Cumbre MWC #17	544'	275'-535'	1938-current
<b>04N28W16J02</b>	Ciampi #1	458'	160'-390'	1954-current

**Table 5-1. Index Wells for determination of SAFE Ordinance 1972 groundwater elevations.**



**Figure 5-6. Average June groundwater elevations for the seven Index wells in the Central subbasin. Gaps in the graph represent years when at least one of the Index wells was not monitored for groundwater elevation.**



**Figure 5-7. Average June groundwater elevations for the seven Index wells in the Central subbasin, with the data gaps of Figure 5-6 partially filled by correlating groundwater elevations between wells (see text for explanation).**

## **5.5 Temporary Surplus**

The term “Temporary Surplus” was used in the Wright Judgment as the amount of water that can be extracted each year from the basin above the safe yield. There was no further discussion in Wright as to how to determine Temporary Surplus. The total amount of water that can be safely extracted from the Goleta basin consists of the safe yield, water stored by GWD and LA Cumbre, and any water that would otherwise be lost from the basin when groundwater elevations are too high. The safe yield and the amount of water in storage are discussed and calculated elsewhere in this Plan. Although groundwater elevations are currently quite high in the basin, it is not clear that any additional water is being lost from the basin as a result.

Thus, it is recommended that Temporary Surplus be considered to be the water placed in storage within the water rights of the Wright Judgment, with the rights to pump Temporary Surplus residing with the organization that stored the water. It is also recommended that the amount of water that would otherwise be lost from the basin because of high groundwater elevations be considered as zero at this time. If subsequent study indicates that there is such loss from the basin, the Basin Operating Group may find that this water can also be considered part of the Temporary Surplus until the high water condition ceases.

La Cumbre does not have any restrictions on when its portion of the Temporary Surplus water can be pumped. Because of SAFE extraction rules, GWD can pump its share of Temporary Surplus water either when groundwater elevations in the basins are above 1972 levels or when a drought on the South Coast causes a reduction in the District’s annual deliveries from Lake Cachuma.

## **5.6 Interaction of Wright Judgment and SAFE Ordinance**

The Wright Judgment and the SAFE Ordinance (which applies to GWD only) work together, with the Wright Judgment quantifying the amount of drought storage and SAFE specifying both the quantity and timing of storage and the rules for extracting water from the drought buffer. Groundwater storage under Wright is meant to augment the basin yield assigned to La Cumbre and GWD. The water can be stored at any time using both in-lieu recharge (groundwater pumping reduced by using other sources of water) and direct injection methods. There are no restrictions in the Wright Judgment as to timing and rate of extraction of the stored water. An annual accounting of water stored under Wright is maintained by La Cumbre and GWD.

SAFE is an operational plan for GWD that augments the storage quantified in the Wright Judgment. SAFE requires a certain amount of water to be stored by GWD when groundwater elevations are below 1972 levels (see section 5.4 – *Determination of 1972 Conditions for SAFE Ordinance*). Because of SAFE extraction rules, GWD can pump its stored water either when groundwater elevations in the basins are above 1972 levels or when a drought on the South Coast causes a reduction in the District’s annual deliveries from Lake Cachuma.

	<b><i>Wright Judgment</i></b>	<b><i>SAFE Ordinance (GWD only)</i></b>
<b><i>Annual Storage Commitment?</i></b>	None	GWD requirement when groundwater elevations below 1972 levels
<b><i>Limit on When Stored Water can be Pumped?</i></b>	None	In years when groundwater elevations are above 1972 levels or when drought reduces Cachuma annual deliveries
<b><i>Annual Limit on Quantity of Stored Water that can be Pumped?</i></b>	None	None
<b><i>Limit on Total Amount of Stored Water that can be Pumped?</i></b>	Cannot exceed the amount stored by La Cumbre or GWD	None

**Table 5-2. Differences between storage requirements for the Wright Judgment and the SAFE Ordinance.**

As indicated in Table 5-2, groundwater storage under Wright is very simple – you can extract the amount that you have previously stored. It is similar to having a bank account. The SAFE Ordinance for GWD is quite different. It is not a bank account but a set of rules for storage and extraction – there is no accounting of the accumulated amount of water that is stored or extracted. The rules for SAFE are based on two criteria – whether groundwater elevations are below 1972 levels and whether Cachuma deliveries have been curtailed. SAFE creates a “Drought Buffer” by filling the basin up to 1972 levels; thus the buffer is defined not by the amount of water that was stored but by the increase in groundwater elevations that was achieved.

The SAFE Ordinance has worked well during the storage phase of the Drought Buffer. Groundwater elevations in the basin rose for almost 20 years and are currently well above 1972 levels (see Figure 5-7). However, there is an uncertainty in how it will function during certain types of shortage situations. Now that the State Project is an integral part of GWD’s supplies, a disruption of those supplies would cause a shortfall in water for GWD customers. As long as Cachuma supplies are also reduced, the SAFE Ordinance works wells. However, the following situations are problematic:

- 1) If there is a drought in northern California but not in southern California (which has occurred in the recent past), then State Project deliveries would be reduced and Cachuma supplies may not be reduced. In this case, GWD could have insufficient supplies to fulfill its annual storage commitment, and would have to recharge the amount of the commitment at a later time when supplies are available. If the State Water deliveries are reduced severely, GWD may have insufficient supply for customers without pumping groundwater.
- 2) Similar to condition #1, except that State Water is reduced because of a natural disaster in northern California or a judicial restriction on deliveries.

From a groundwater management perspective, the situations outlined above are antithetic to conjunctive use of water supplies. The question then becomes whether these are realistic situations that GWD could face. Although droughts can occur in one part of the State and not the other, the duration and consequences of this scenario must be analyzed before the pumping restrictions in the SAFE Ordinance are considered problematic. GWD's Water Supply Management Plan, planned for completion in late 2010, is examining the probability and consequences of this scenario.

## **5.7 Groundwater Pumping Plan for Basin**

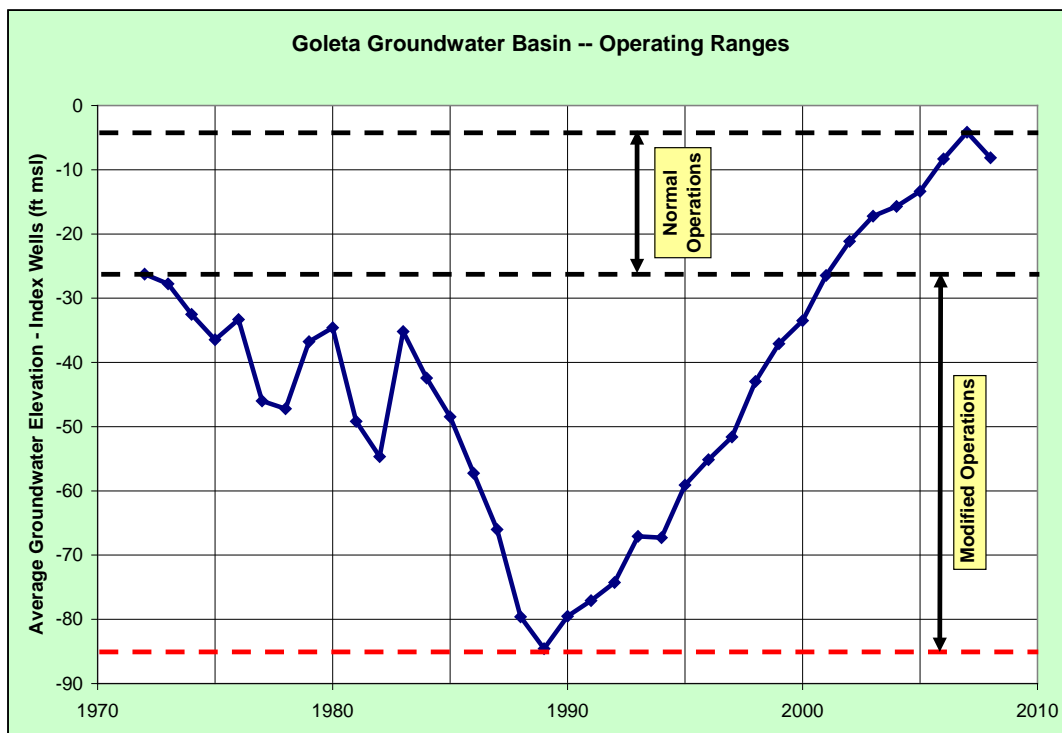
Reduced pumping in the Goleta Groundwater basin over the past two decades, particularly by GWD, has allowed groundwater elevations in the basin to rise 20 feet above 1972 levels (see section 5.4-*Determination of 1972 Conditions for SAFE Ordinance*). 2008 groundwater elevations are at or very near the highest levels recorded in the basin in both the Index Wells and in other wells in all three subbasins. In fact, some wells are approaching flowing artesian conditions. Allowing groundwater elevations to rise further could cause unintended negative consequences, including leakage of groundwater to the surface in both existing and destroyed or abandoned wells. Artesian conditions in a wide area of the Oxnard Plain in 1998 caused wells to flow and abandoned wells to leak beneath roads and parking lots – one abandoned well flowed hundreds of gallons per minute from beneath the front yard of an urban house, creating neighborhood flooding for weeks until a drilling company could stop the flow.

Low groundwater elevations in the Index Wells occurred in 1989. If groundwater is pumped in the future such that groundwater elevations fall below 1989 levels (into uncharted territory), there are risks associated with that action. Risks include:

- Dewatering of fine sediments (such as clays) that serve as aquitards or are interbedded in the aquifer. This dewatering causes subsidence at the land surface, which can result in structural damage and even reversal of drainage directions. Subsidence is generally irreversible. Subsidence is common in overdrafted basins in California.
- Pulling in poor-quality water from surrounding sediments, bedrock, or along faults. Significantly lowered groundwater elevations in the coastal plain of Ventura County have induced the flow of deep oil-field brines into overlying aquifers.
- Although it appears that a bedrock high beneath the Goleta Slough protects the Goleta Groundwater basin from intrusion of seawater, the lowering of groundwater elevations at the coast could allow seawater to intrude through yet-unknown paths. If seawater was introduced into the aquifers, management of the basin would have to change significantly to ensure that no further landward movement of the salts occurred. Such management would likely include further limitations on future pumping.

Given the potential difficulties when groundwater elevations are allowed to rise too high or fall too low, there appears to be a range of groundwater elevations over which the basin should be managed (Figure 5-8):

- 1) Groundwater elevations between the low elevation in the Index Wells in 1989 and the 1972 elevations are within the Modified Operations range, and should be reserved for water shortage conditions (see section 5.8-*Drought Plan for Groundwater Pumping*). This range coincides with average groundwater elevations of -85 feet to -26 feet for the Index Wells.
- 2) Groundwater elevations between the 1972 and 2007 elevations for the Index Wells should be considered within the Normal Operations range for the basin. This range coincides with average groundwater elevations of -26 feet to -4 feet for the Index Wells.



**Figure 5-8. 1972 Index groundwater elevations for Normal Operations and Modified Operations in the Central subbasin.**

La Cumbre is not as constrained in its operations as GWD is with the SAFE Ordinance, but the principles discussed here also broadly apply. If the basin is full, La Cumbre will also have no storage space for its share of Cachuma spill water. How the purveyors can work together on operating plans is discussed in section 5.11-*Basin Operating Group*.

A plan for the Modified Operations range is discussed in the next section. Within the Normal Operations range (Figure 5-8), the primary objectives should be retaining storage space for Cachuma spill water and reducing customers' costs. If groundwater elevations remain near the top of the Normal Operations range, there is less storage space for Cachuma spills which would otherwise flow to the ocean. Thus, storage space should be maintained by pumping groundwater in volumes close to the annual water right for the purveyors (approximately 2,000 acre-feet per year for GWD and 1,000 acre-feet per year

for La Cumbre), as long as groundwater elevations remain within the Normal Operations range (this assumes that appropriate water quality can be delivered to customers).

There may be times when pumping significant groundwater does not make sense (e.g., a wet year where there is an abundance of cheaper Cachuma spill water). If groundwater elevations were maintained near the bottom of the Normal Operations range prior to the spill year(s), then the rise in groundwater elevations caused by reduced pumping and storage of spill water is less likely to overfill the basin. Following the spill year(s), groundwater elevations can be lowered by resuming groundwater pumping.

## **5.8 Drought Plan for Groundwater Pumping**

The combination of the Wright Judgment's groundwater storage component and GWD's SAFE Ordinance has established a large storage bank in the Central subbasin for droughts and other potential shortages of supply. The amount of groundwater La Cumbre can pump from the storage programs cannot exceed the amount of water it has stored in the basin (although it can pump additional water from its water right as long as the ten-year moving average of pumping does not exceed 1,000 acre-feet per year). La Cumbre will likely pump from its share of the groundwater storage when State Water deliveries are curtailed because of drought conditions in northern California or some other disruption to supply.

GWD's use of groundwater in storage is controlled by both the SAFE Ordinance and the Wright Judgment. The Wright Judgment only requires that there is storage available that was accumulated by either injection in wells or by deliveries of other supplies in lieu of pumping GWD water right. Specified effects of increased GWD pumping on other pumpers would also need to be mitigated. The SAFE Ordinance is more restrictive, limiting pumping of stored water in some circumstance (see discussion in section 5.6 – *Interaction of Wright Judgment and SAFE Ordinance*).

The length of a drought over which the buffer will provide adequate supplies depends upon whether the drought is restricted to northern or southern California, or is a State-wide drought. Over the past century or so, about half the droughts have been regional and half have been State-wide. The biggest stress on local water supplies occurs when both the State Water Project and Cachuma Reservoir are experiencing drought.

The effectiveness of drought protection in the basin can be estimated either using the expected decline in groundwater elevations when the stored water is pumped during a drought or using the annual volume withdrawn during a drought.

**Method 1:** During the 1986-91 drought, there was about an 8 foot per year decline in groundwater elevations in the Index Wells when about 2,500 acre-feet per year of groundwater were pumped above the current water right (2,000 acre-feet per year current GWD water right plus 2,500 acre-feet per year above that for a total of 4,500 acre-feet per year pumped by GWD – see Figure 3-21). Because the Modified Operations zone (between 1972 and 1989 groundwater elevations) encompasses a range of 59 feet of groundwater elevation for the Index Wells, stored water could be pumped for 7.4 years if groundwater elevations dropped 8 feet per year (Table 5-3). Pumping more or less than the 2,500 acre-feet per year of extra groundwater above current water rights would shorten or lengthen that

time, respectively. Now that State Water is available, that water could lengthen the effectiveness of drought protection by providing a supplemental supply to groundwater. In addition, water conservation, either through voluntary or mandated actions, could substantially lengthen the effectiveness of the Drought Buffer.

<i>Method of Estimation</i>	<i>Additional Drought Pumping (AFY)</i>	<i>Annual Decline</i>	<i>Drought Buffer (Yr)</i>
<b><i>Drought 1986-91</i></b>	2,500	8 ft/yr	7.4

**Table 5-3. Method 1. Decline in groundwater elevations method to estimate the number of years that the Drought Buffer would have storage available in a drought. The details of the methods are discussed in the text. If an additional 2,500 acre-feet per year were extracted every year of a drought (equivalent to the drought of 1986-91), then the Drought Buffer would provide drought protection for 7 years.**

The advantage of this first method of determining the length of time that the stored water would be effective is that the rate of decline was measured during a drought when two factors combined to decrease water levels – increased pumping and reduced recharge to the basin. This circumstance is likely to occur again in the next drought.

**Method 2:** In this method, the volume of stored groundwater is used and the annual withdrawal from storage determines the length of time that there would be an additional drought supply. Using the amount of water stored in the basin by GWD and La Cumbre (34,000 acre-feet) as the volume of additional water that could be pumped in a drought, the number of years that this stored water could be utilized depends upon the annual amount of pumping.

In this method, there is an extra 2,500 acre-feet per year pumped from the basin for illustrative purposes. A simple calculation is that it would take over 13 years to deplete the stored groundwater (Table 5-4). The missing element in this method is the concurrent reduction in recharge that occurs in the basin during a drought. Thus, Method #1 suggests that groundwater elevations would drop to near historical low levels in a little over 7 years, even though the stored groundwater was only partially used. The 7-year estimate is the most likely outcome, because it factors in the loss of recharge, as well as the additional 2,500 acre-feet per year of groundwater pumping.

<i>Method of Estimation</i>	<i>Additional Drought Pumping (AFY)</i>	<i>Drought Protection (Yr)</i>
<b><i>Volume of Stored Water</i></b>	2,500	13.6

**Table 5-4. Method 2. Volume in stored water method to estimate the number of years that the stored water could supplement supplies in a drought. The details of the method are discussed in the text. It is likely that groundwater elevations would reach historical low levels before the stored water is exhausted.**

Although droughts in historical experience in southern California have not lasted continuously for decades, there is certainly ample evidence from tree ring studies that longer droughts have occurred in the past several thousand years. If a longer drought occurred in California, water purveyors who pump groundwater would be in a much better position than those who rely solely on surface water supplies. It would be prudent to discuss some strategies for the Goleta Groundwater Basin if a very long drought occurred.

An extended drought might require pumping groundwater to below historical elevations. The potential risks of pumping groundwater below historical-low elevations are discussed in section 5.7-*Groundwater Pumping Plan for Basin*. In addition, it is also likely that production yields for individual wells will decrease as groundwater elevations decrease. This relationship was detected during the drought of 1986-1991, when production capacity from GWD's wells dropped by a third over a period of five years as groundwater elevations dropped to their historical low (GWD, 1988).

If pumping below the historical low groundwater elevations is contemplated in the future, increased monitoring would be necessary to detect potential problems in the basin. A rule of thumb for increasing pumping in a coastal basin is to move the pumping inland, away from the potential source of seawater intrusion. Equally important is to increase monitoring to detect any potential undesirable effects from the pumping. This monitoring should include increased water quality measurements near the area of pumping, periodic measurements to detect ground-surface subsidence, and increased water quality measurements near the coastline. If there are insufficient wells for monitoring, dedicated monitoring wells should be installed. The cost of new monitoring wells is small compared to future costs if the aquifer is damaged.

## **5.9 Confirm Basin Hydrogeology**

Although there has been significant work done on understanding the basin, there are some aspects of the basin that are not well understood. For example, there are various opinions on the extent of confining layers in the basin. The location of confining conditions is important because in these areas the aquifers are protected from contamination from overlying sources, which could range from leaking gasoline tanks to intrusion of saline waters during sea level rises. It is recommended that a long-term plan be formulated to prioritize and address potential unknowns in the basin. Portions of the plan could then be implemented as funding or grants become available.

## **5.10 Shifting of Pumping Locations**

It may be advantageous to shift the location of some pumping away from the southeastern portion of the Central subbasin (this may only be practical for GWD). Such a shift would move pumping from an area of the basin where there are lowered groundwater elevations (Figure 2-2) to areas with higher groundwater elevations. Such a shift would allow groundwater elevations to recover in the lowered areas, better balancing the basin and potentially preventing such problems as future water quality degradation in the areas of lowered groundwater elevations. It is recommended that the

groundwater model be used to evaluate the effect of relocating some pumping to different portions of the basin.

### **5.11 Basin Operating Group**

There are a number of issues in the Goleta Groundwater Basin that require regular attention. These include:

- Coordination of plans for pumping and storage;
- Annual accounting for water in storage;
- Analysis and discussion of latest changes in Index Wells and Index;
- Determination of whether basin is in normal operating mode or drought mode;
- In a drought, annual reviews of amount of storage remaining and (later in a drought) planning for potential pumping below Drought Buffer;
- Review of water quality data to determine if pumping patterns are causing undesirable effects in the basin.

It is recommended that a Basin Operating Group of the staff of La Cumbre and GWD be formed to deal with these issues. It is probably sufficient that the committee meet semi-annually, with the frequency increased during a drought or if there is a problem in the basin. It is recommended that the chair of the group be rotated bi-annually between GWD and La Cumbre. This committee is not envisioned as an additional layer of governance in the basin – it would play an advisory role to basin purveyors and groundwater pumpers.

### **5.12 Global Climate Change Considerations**

Modeling of long-term climate change is problematic at best. There is general agreement that California will be warmer, which has several potential impacts. The effect on precipitation patterns is not entirely clear. The U.S. Global Change Research Program (2009) predicts lower rainfall and longer droughts in the southwestern United States. Ongoing studies by the California Department of Water Resources (e.g., DWR, 2006) indicate that rainfall in southern California will not change significantly, with climate modeling indicating that precipitation will increase in wet years in the Sierra, but decrease in dry years. This modeling suggests that these effects will likely be less than a 10% swing in precipitation in either direction.

The four largest potential effects for the Goleta Groundwater basin are from higher overall temperatures:

- Higher temperatures will increase evapotranspiration and likely cause an increase in outside water use and crop irrigation;
- Periodic drought periods may be longer in duration, affecting recharge to the groundwater basin, runoff into Cachuma Reservoir, and water availability from the State Water Project;
- A projected sea level rise of three to six feet during this century would potentially allow the sea to encroach farther up the Goleta Slough and extend

the estuary over portions of the West and Central subbasins. This encroachment will likely occur over the portions of the basin that are under confined conditions – that is, there are low-permeability sediments that separate the estuary at the surface from the drinking water aquifers at depth. Thus, it is unlikely that this encroachment would allow saline water into the aquifers. However, such encroachment would require additional monitoring wells to be installed to ensure that downward percolation of saline waters does not occur. Preventing the encroachment of the ocean onto coastal plains around the world will be a major effort – it will be expensive and disruptive. It is not known at this time if the Goleta Slough area would be protected from encroachment in the future as part of this global effort.

- More of the winter precipitation in the Sierra Nevada will fall as rain instead of snow. Because Sierran dams are partially operated as flood control facilities, some of the winter rain runoff will have to be released from the dams to preserve storage space for later storm events, effectively reducing winter storm capture and water available for the State Water Project.

The California Department of Water Resources is currently evaluating how reservoir operations can be modified to respond to these changes. DWR updates its State Water delivery probability curves regularly; as global climate change is integrated into these curves, the recipients of State Water in the Goleta Groundwater Basin should use these updates to modify their own supply projections.

### ***5.13 Use of Recycled Water***

Recycled water is becoming increasingly an important supply of water in California as treatment plants have upgraded their treatment processes, recycled water has become more accepted by the public, and water has become scarcer in the State. Unlike other sources of water, the availability of recycled water is fairly stable through drought and wet periods – thus, it is considered to be the most reliable source of water. There are more-strict State requirements for use of recycled water than for other water sources. The requirements become increasingly complex as the recycled water is used in situations where there may be contact with drinking water supplies or edible crops. Irrigation of landscape plants is the least restrictive use. The irrigation of food crops generally requires more advanced treatment, with many produce buyers now requiring a source water audit and regular testing of any type of applied water and of the produce itself.

When the recycled water is used for direct recharge of drinking-water aquifers either through surface spreading basins or injection wells, both the State Department of Public Health and the Regional Water Quality Control Boards are involved in permitting of facilities. One of the important permitting issues is whether there is sufficient travel time of the recharged water between the point of recharge and nearby drinking-water wells (the anaerobic conditions in the aquifer kill pathogens) as an additional safety factor in using the recycled water.

The GWD has planned for water recycling since at least 1980. In 1995, the GWD developed a water recycling project in cooperation with the Goleta Sanitary District. The recycled water project is currently delivering approximately 1,000 acre-feet per year to

the University of California Santa Barbara campus, several golf courses, and other irrigation users, most of whom were previously using the GWD potable water for irrigation. The GWD anticipates that recycled water use will increase in future years (GWD, 2008). It was recognized that recycled water has the greatest long-term delivery reliability of any water source because the amount of wastewater flowing into the Goleta Sanitary District even in severe drought conditions far exceeds current recycled water demand.

The least expensive and most accepted use of recycled water is for direct delivery to irrigation users. Recycled water is also used for recharge of groundwater basins, particularly in southern California. However, the increased cost of the advanced treatment necessary for permitting of such facilities precludes its use except when other sources of water have been fully utilized. Consideration of aquifer recharge using recycled water is not recommended at this time for the Goleta basin, especially when expansion of direct use for irrigation is possible.

### **5.14 Water Balance**

A water balance for the basin is an accounting of the inputs and outputs of water to the basin. Examples of inputs to the basin include recharge from percolation of rainfall, percolation from streams, percolation of applied irrigation water, subsurface flow from adjoining bedrock areas and groundwater basins, artificial recharge, and subsurface inflow of salt water from the ocean. Outputs include pumping, subsurface outflow to adjoining basins and/or the ocean, discharge to streams or lakes (when groundwater is at ground surface), and evapotranspiration (when groundwater is near ground surface). The yield of a groundwater basin is the amount of pumping that can occur without creating conditions where outflow exceeds inflow to an extent that undesirable effects occur in the basin. Thus, a water balance can be used to approximate the amount of water that can be safely pumped (i.e., yield of the basin). The yield of a basin can change as inputs and outputs change with time, so it is important to regularly revisit the water balance.

Some of the components of a water balance can be measured, whereas many others can only be approximated. An approximate water balance was constructed to determine the water rights in the basin under the Wright Judgment. In addition, a water balance was required to construct the groundwater model (although some of the inputs and outputs are calculated internally by the model when it is calibrated). It is recommended that the components of the water balance be categorized using measured and model results, with the objective being to determine the various components with more accuracy and fine-tuning the yield of the basin determined during the Wright litigation.

### **5.15 Groundwater Modeling**

The Goleta Groundwater Basin groundwater model was to evaluate potential locations for new wells (see section 5.10-*Shifting of Pumping Locations*) and effects of drought pumping. The model is currently being reviewed by GWD. For future use of the model, it is recommended that procedures be put in place for model maintenance and modeling runs. The procedures should include who would be responsible for maintaining and operating the model (in-house or consultant), whether other organizations could use

the model, and how would it be modified in the future when additional information is known about the basin.

### **5.16 Tracking Contamination Threats**

As discussed in section 3.1.2-*Current Groundwater Quality*, there are number of sites of soil and shallow groundwater contamination in the basin. Although most of the sites overlie areas of the aquifers under confining conditions and the contamination is unlikely to leak into the underlying aquifers, it is recommended to review the contamination sites annually. This can easily be done on the State Water Resources Control Board's GeoTracker website. Of particular interest would be sites near drinking-water wells. If a contamination site is identified near one of these wells, it is recommended to make contact with the Regional Board and express an interest in following developments in the cleanup operation. If a site is found in the unconfined portion of the aquifer (near the foothills) and contaminants have been found within groundwater, there should be immediate contact with the Regional Board and cleanup proposals be reviewed with the Board to ensure that the contamination doesn't spread in the aquifer.

### **5.17 Update of Plan**

Regularly-scheduled updates to this Groundwater Management Plan are both prudent and required for State funding of groundwater grants. Other plans that are required by the State (e.g., Urban Water Management Plan) have a five-year update schedule, so it is recommended that this Groundwater Management Plan also have a five-year update schedule. Updates should include current groundwater level and groundwater quality data, groundwater pumping data, groundwater storage data, and any modifications to groundwater operating plans. Updating the Plan should be much less effort than the initial writing of the Plan. The updates should be adopted by GWD and La Cumbre.

### **5.18 Changes in Rules and Regulations**

The interaction of the SAFE Ordinance with Wright Judgment storage rules appears to allow complementary use of these storage programs. If, however, there is a conflict in the future use this stored water, the SAFE Ordinance may need to be modified. This would require a vote of the public in an election.

### **5.19 Tasks and Timeline**

The following items were proposed in this Plan as future tasks:

#### **Section: *Semi-Annual Monitoring of Groundwater Elevations***

Change months for groundwater elevation monitoring – The proposed change in the date of spring measurements is already being implemented.

Ensure nearby wells are not pumping during groundwater elevation monitoring – This procedure is currently being discussed with the U.S. Geological Survey.

#### **Section: *Additional Monitoring Points***

Add monitoring wells in the basin – This recommendation should be implemented over the next several years. It is recommended that the wells be installed using grant funding, with a focus on AB 303 funding.

**Section: *Monitoring of Water Quality***

Download DPH data every two years – This recommendation should be implemented starting in 2011 and every two years thereafter.

Additional water quality monitoring – The choice of which additional existing wells to monitor should be made prior to 2011, with data collection in 2011 and every two years thereafter. Two or three wells should be chosen from the list provided in section 7.2 *Appendix B – Additional Water Quality Wells*.

**Section: *Determination of 1972 Conditions for SAFE Ordinance***

Calculate Well Index – Calculate well index every year following acquisition of spring water levels.

**Section: *Confirm Basin Hydrogeology***

Devise long-term plan – Devise a long-term plan to better understand the basin hydrogeology. This long-term plan should be completed prior to the next update of the Groundwater Management Plan.

**Section: *Shift of Pumping Locations***

Determine site for two or three new wells – Following the analysis using the groundwater model, plan for next well sites. Planning should be accomplished before the next Plan update.

**Section: *Basin Operating Group***

Implement Basin Operating Group – Within one year of adoption of this Plan, implement first group meeting.

**Section: *Water Balance***

Better-define water balance – This task is ongoing, with improvements being incorporated from modeling experience.

**Section: *Groundwater Modeling***

Determine procedures and operation – Procedures should be put in place for future model maintenance and modeling runs. This planning should be completed within two years of adoption of this Plan.

**Section: *Tracking Contamination Threats***

Review contamination sites – Review GeoTracker contamination data once a year.

**Section: *Update of Plan***

Update Plan regularly – Update this Plan every five years.

**Section: Changes in Rules and Regulations**

SAFE Ordinance drought trigger – If the GWD’s Water Supply Management Plan determines that it would be prudent to add additional triggers for use of the Drought Buffer (e.g., shortage of State Water), review whether GWD should attempt to modify the Ordinance.

## 6 References

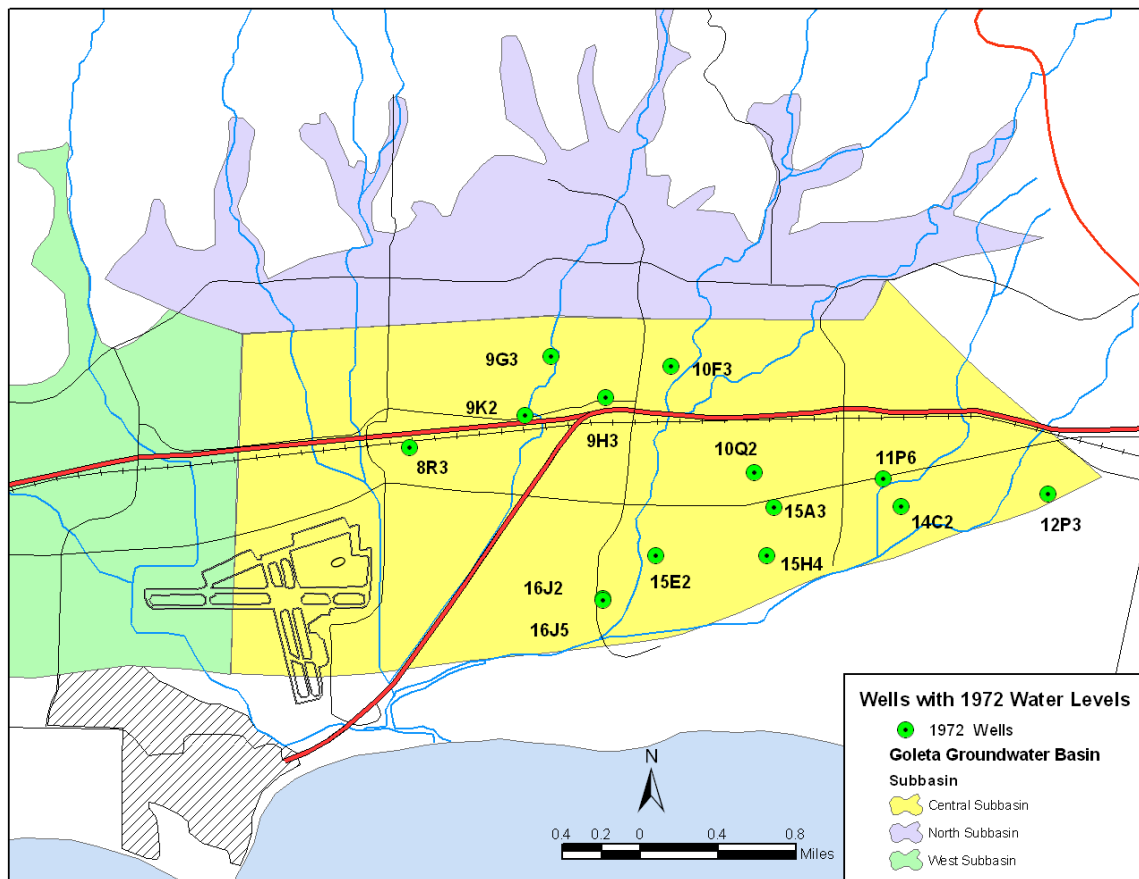
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## 7 Appendices

### 7.1 Appendix A – Determination of 1972 Index Wells for SAFE Ordinance

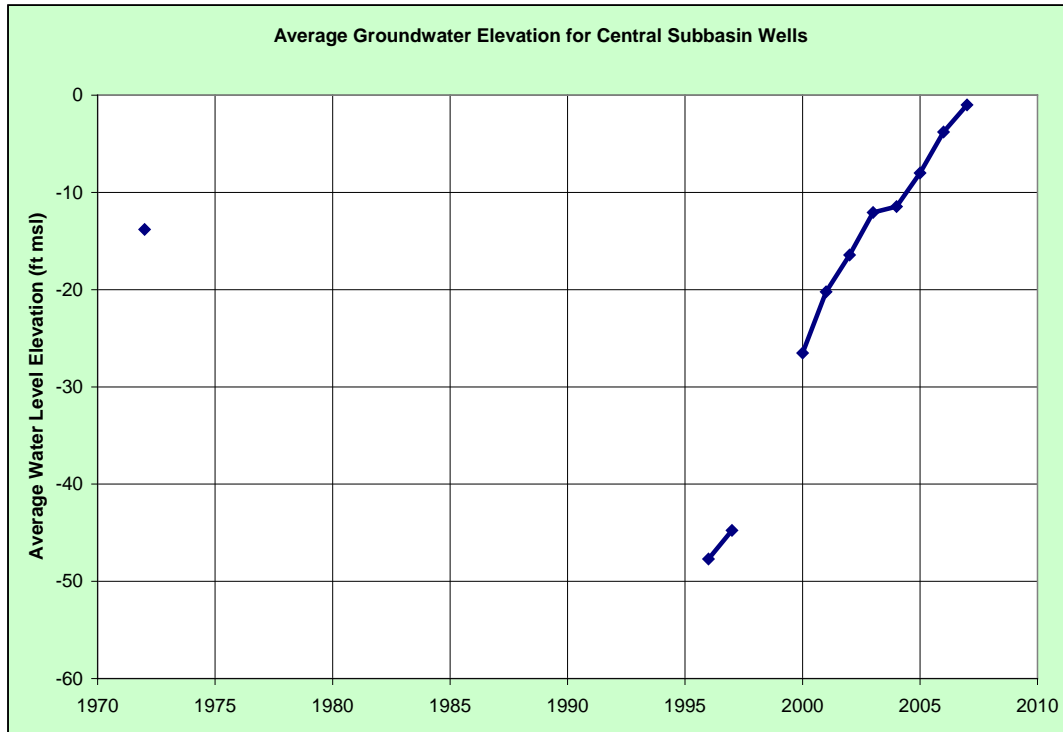
A total of 14 wells were available in the Central subbasin which had monthly water level measurements in 1972 and are currently being monitored. The geographic distribution of these wells is shown in Figure 7-1. Groundwater elevations for these wells were used to construct a historical record for groundwater elevations in June of each year (Figure 7-2). The annual value shown on the graph was calculated by averaging the groundwater elevations for that June in each of the wells. Gaps appear in the historical record when at least one of the wells had no reported measurements of groundwater levels in that year.



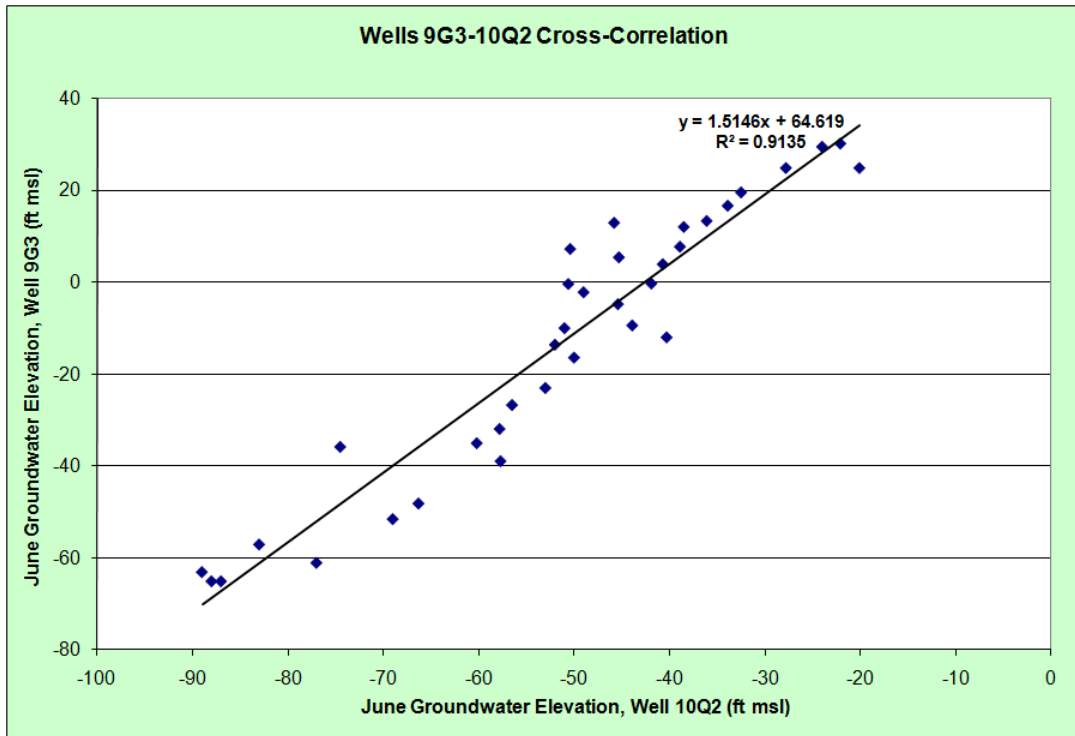
**Figure 7-1. Map of wells for which there were monthly groundwater elevation measurements in 1972 and for which there is current monitoring.**

To determine what the average looked like in the years where there was at least one missing water level measurement, the average curve was extended by reconstructing data in the missing years. To approximate a missing groundwater elevation measurement in a particular well, groundwater elevations in that well and nearby wells with no missing

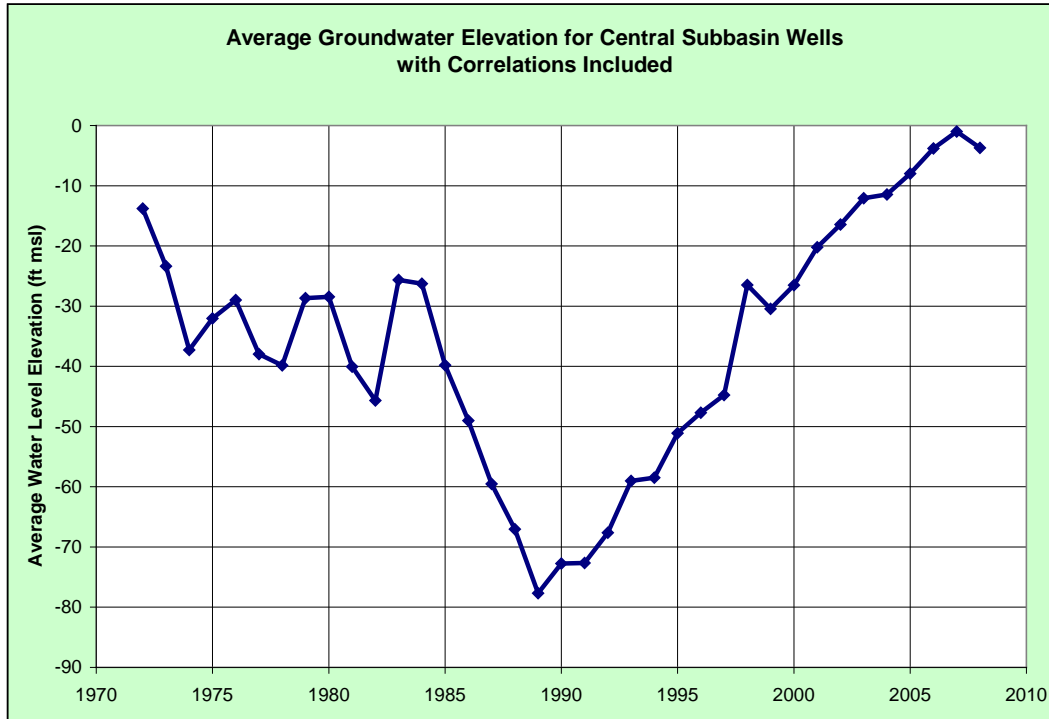
measurements were cross-correlated for the periods when there were measurements in both wells. A least squares linear analysis of the data was then performed, with a trend line calculated. If the  $R^2$  (coefficient of determination, a value of one being the most reliable line fit) of the line fit was higher than 0.8 (e.g., Figure 7-3), then the resulting formula from the line fit was used to calculate the June groundwater elevation in the unmeasured well. This technique filled out the missing data and allowed average groundwater elevations to be calculated for each year (Figure 7-4). Figure 7-4 indicates that the low groundwater elevation between 1972 and 2008 occurred in 1989, during the drought of the late 1980s and early 1990s.



**Figure 7-2. Average June groundwater elevations from all wells for which there were monthly groundwater elevation measurements in 1972 and for which there is current monitoring. In years for which no groundwater elevations are shown, at least one of the 14 wells did not have measurements in that year.**



**Figure 7-3. Method used to cross-correlate water level measurements between two 1972 wells.** Each data point represents a single year – the June groundwater elevations from wells 10Q2 and 9G3 are plotted using the x axis and y axis, respectively. The line represents the best least-squares fit of the data points. The correlation factor (R<sup>2</sup>) and the equation for the correlation line are also shown. The equation is then used to calculate a missing measurement when only one well was measured in June of any year.

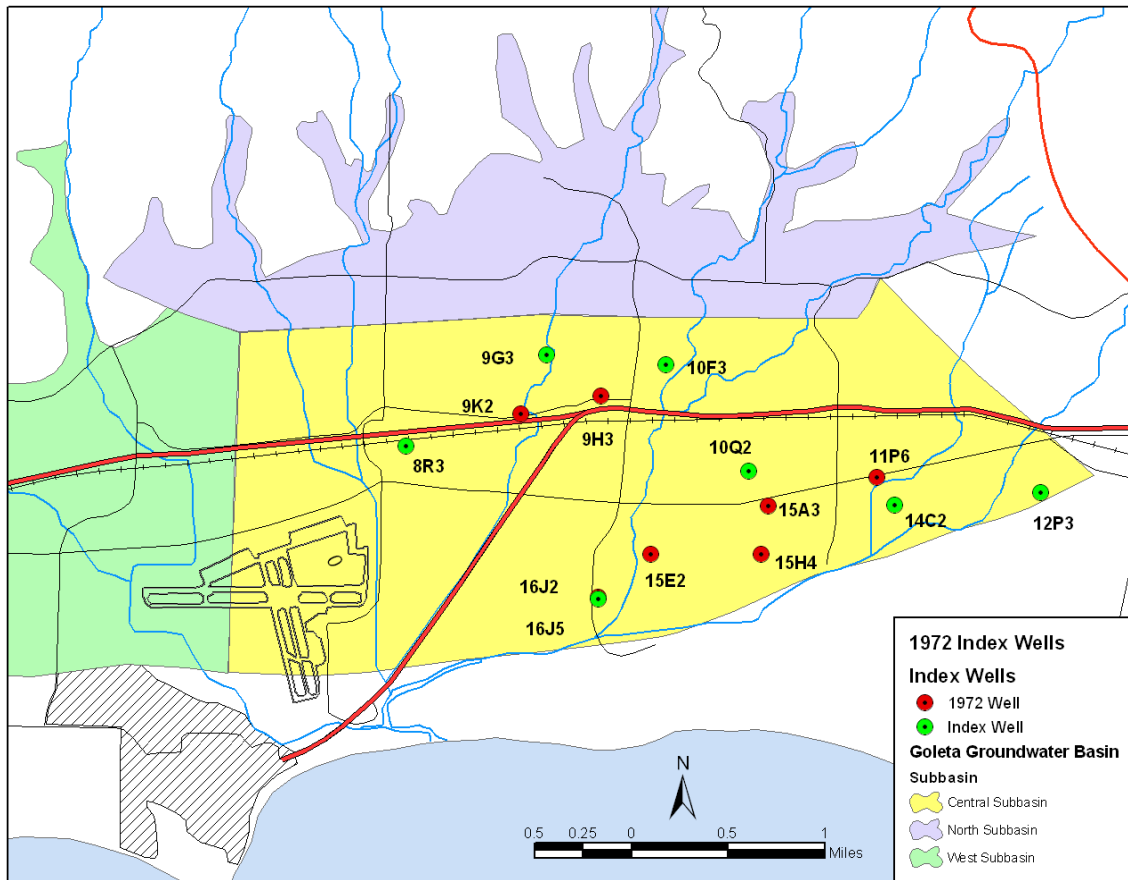


**Figure 7-4. Average June groundwater elevations of the 14 wells, with missing data filled in by cross-correlation with nearby wells.**

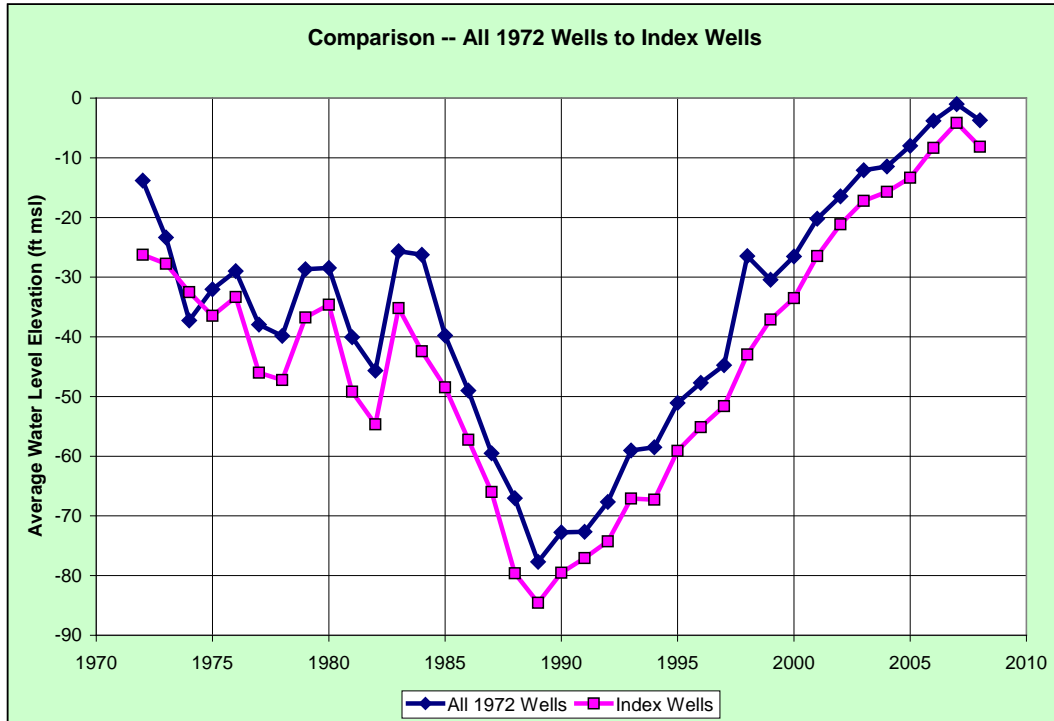
An option for determining where current groundwater elevations are relative to 1972 elevations is to use all 14 wells. The difficulty in doing so is that a significant number of wells need to be cross-correlated, and more importantly, there must be continuous monitoring in the future for all 14 wells for comparison with 1972 levels. Wells do not last forever, so as the 14 wells are destroyed in the future, there must be a replacement well installed that has the same construction (e.g., depth, perforated intervals) as the destroyed well. This may require the purveyors to install a dedicated monitoring well at the site of the destroyed well if the well owner doesn't replace the well in an identical fashion.

To reduce the number of wells that are averaged to determine 1972 groundwater elevations, a geographic spread of 1972 wells was selected that represent both shallow and deep wells (Figure 7-5). These seven Index Wells require less cross-correlation than using all 14 wells and it will be easier to maintain these well sites in the future. To determine the effect of selecting a sub-group of Index Wells, correlated curves for all 14 wells and for the seven Index Wells are compared in Figure 7-6. The two curves have identical shapes, with the Index Well curve shifted downward by three to ten feet.

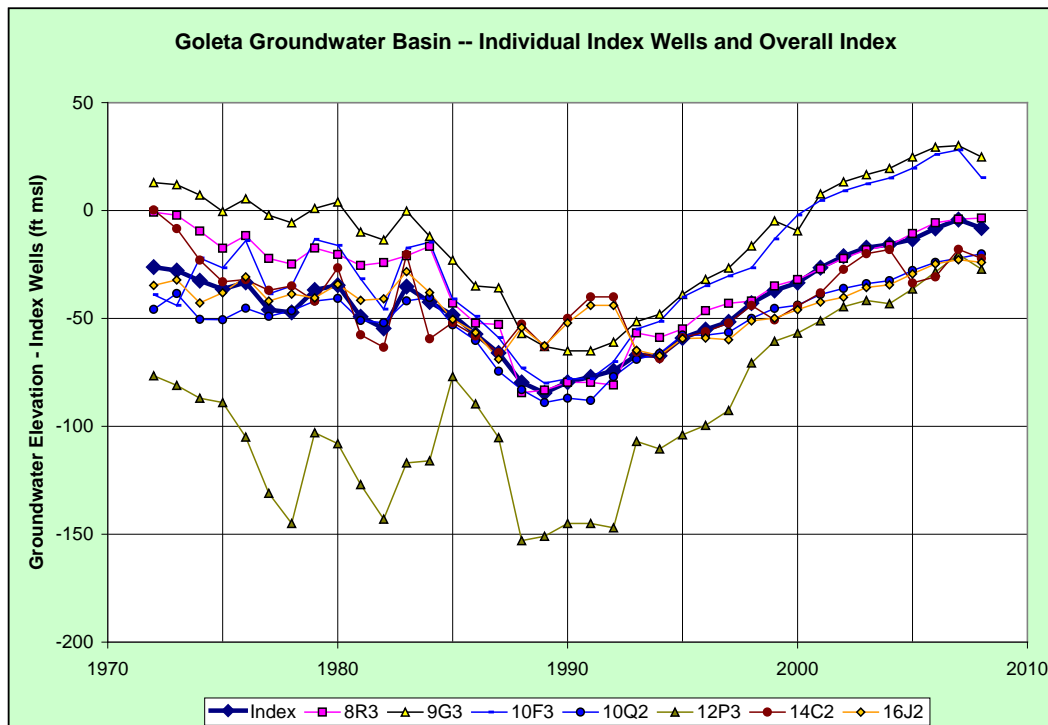
Individual wells that make up the 1972 Index are plotted along with the Index Well curve in Figure 7-7 to determine if any one well or one measurement is overly influencing the Index Well curve. All the Index Wells have the same curve shape as the overall Index, even though absolute groundwater elevations vary across the basin, indicating that the Index fairly reflects groundwater elevations in the overall Central subbasin.



**Figure 7-5. Wells selected as Index wells from the larger population of wells that have monthly 1972 water level measurements and are currently monitored.**



**Figure 7-6. Average June groundwater elevations using all 14 of the 1972 wells and using a subset of seven of the wells (Index Wells). The two methods have the same shape of curve, with the Index Well curve shifted downward by a few feet.**

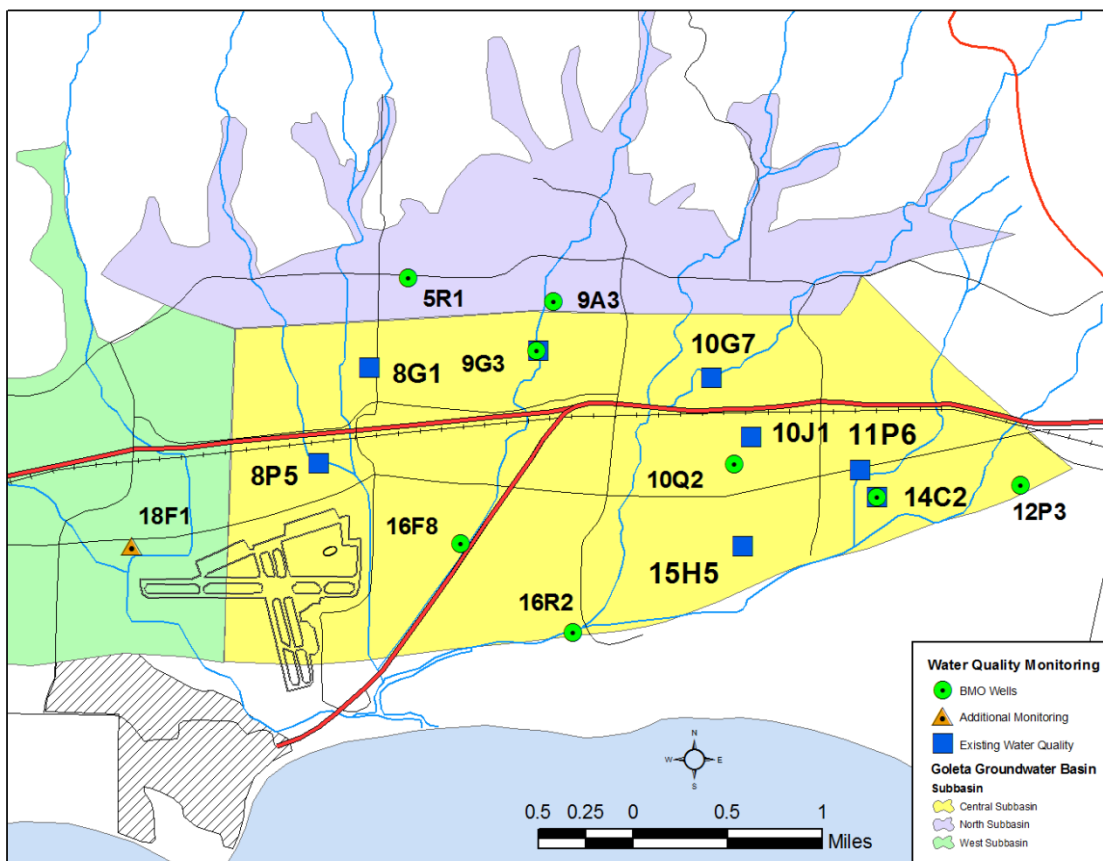


**Figure 7-7. Average June groundwater elevations for all seven Index Wells (thick line) and June groundwater elevations for each of the Index wells. Some data points are cross-correlated with nearby wells as discussed in the text. The groundwater elevation curve for individual wells is the same shape as the Index curve, with absolute elevations varying by location in the Central subbasin.**

## **7.2 Appendix B – Additional Groundwater Quality Monitoring**

Groundwater quality monitoring is currently conducted by GWD and La Cumbre as part of their California Department of Public Health permit to deliver drinking water. This monitoring constitutes a backbone of the recommended groundwater quality network. This backbone monitoring does leave un-monitored gaps in the basin, especially near the coastal portions of the basin (Figure 7-8).

It is recommended that additional groundwater quality monitoring points be added sequentially both for the BMO wells and a well in the West subbasin (Figure 7-8, Table 7-1). The wells are listed sequentially so that wells can be in stages. An annual general minerals analysis is recommended.



**Figure 7-8. Wells where water quality is currently being monitored. BMO wells that are not currently monitored are recommended for inclusion in the water quality monitoring program, as is a well in the West subbasin.**

<i>State Well Number</i>	<i>Name</i>	<i>Frequency</i>	<i>Analyses</i>
<b>4N/28W-12P3</b>	La Cumbre #7	DPH <sup>15</sup>	DPH
<b>4N/28W-16R2</b>	More Mesa #1	Annual	General Min
<b>4N/28W-16F8</b>	Mission #1	Annual	General Min
<b>4N/28W-18F1</b>	Bishop #4	Annual	General Min
<b>4N/28W-5R1</b>	Martini	Annual	General Min
<b>4N/28W-9A3</b>	Mulligan	Annual	General Min
<b>4N/28W-10Q2</b>	Emmons	Annual	General Min

**Table 7-1. Recommendations for additional water quality sampling in the Goleta basin. The wells are listed in priority order from top to bottom, so that the wells can be added in stages.**

<sup>15</sup> This drinking water well is currently monitored for water quality under requirements of California Department of Public Health – the results of the monitoring should be included in the future in the water quality database for the basin.

Goleta Water District  
BOARD OF DIRECTORS



*William Rosen – President*  
*Jack Cunningham – Vice-President*  
*Bert Bertrando – Director*  
*Lauren Hanson – Director*  
*Larry Mills – Director*  
*John McInnes – General Manager*

**Regular Meeting Minutes**

**Action Summary**

**Tuesday, May 11, 2010**

**5:30 P.M.**

**Goleta Water District Headquarters  
Board Room  
4699 Hollister Avenue, Goleta, CA 93110**

**Agendas, Supplemental Materials and Minutes of the Goleta Water District Board of Directors meetings are available on the internet at [www.goletawater.com](http://www.goletawater.com)**

5:30 p.m. ....Convened to Regular Session

**Roll call** – President Rosen; Vice President Cunningham; Director Bertrando; Director Hanson; Director Mills.

**ALSO PRESENT WERE:** John McInnes, General Manager; George Eowan, Assistant General Manager; Mike Kanno, Operations Manager; Greg Paul, Water Treatment Superintendent; Matt vanderLinden, Civil Engineer; Carrie Bennett, Engineering Technician; Becky Cantrell, Acting Administrative Manager; Fran Farina, General Counsel; Beth Horn, Assistant Board Secretary; Dr. Steven Bachman; Kate Rees, Manager of Cachuma Operation & Maintenance Board (COMB) and the Cachuma Conservation Release Board (CCRB); Susan Basham, Counsel with Price, Postel & Parma; Eva Turenchalk, Director Goleta Sanitary District.

#### **CONSENT AGENDA**

- CA-1) MINUTES OF THE BOARD OF DIRECTORS APRIL 13, 2010 AND APRIL 22, 2010 MEETING**
- CA-2) GENERAL COUNSEL’S MONTHLY REPORT**
- CA-3) GOLETA WATER DISTRICT’S MONTHLY INTERIM FINANCIAL STATEMENTS**
- CA-4) GOLETA WATER DISTRICT’S MONTHLY ACCOUNTS RECEIVABLE SUMMARY REPORT**
- CA-5) GOLETA WATER DISTRICT’S MONTHLY CASH DISBURSEMENT REPORT**
- CA-6) GOLETA WATER DISTRICT’S MONTHLY INVESTMENT REPORT**
- CA-7) LAIF AUTHORIZED SIGNATURES**

The Board did not take any action on the consent agenda items and the items will be considered by the Board at an adjourned meeting on May 13<sup>th</sup>.

**PUBLIC INPUT:** Speakers on this item were Jack Ruskey, Roberta Weissglass, Jeff Hanson and Michael Petretta.

**5) APPEAL BY SANTA BARBARA WILDLIFE NETWORK**

Ms. Bennett presented a report on the Santa Barbara Wildlife Care Network appeal as allowed under Chapter 8.30 of the Goleta Water District Code concerning the release of 100% of the associated Letter of Credit in advance of the required 1-year warranty period.

Joann St. John, Capital Campaign Chair of the Santa Barbara Wildlife Care Network, gave a presentation regarding their organization's appeal process.

Speaker on this item was Jim Marino.

A motion was made by President Rosen, seconded by Director Bertrando, to approve the appeal by Santa Barbara Wildlife Network subject to the applicant signing an agreement that in the event of a failure, they would be fully liable to pay for a repair or if the District does the repair work, the applicant would pay the District. The motion failed by the following roll call vote:

Ayes: 2 – Directors Bertrando, Rosen

Nay: 3 - Directors Cunningham, Hanson, Mills

**6) GROUNDWATER MANAGEMENT PLAN**

Dr. Steven Bachman presented a report on the final 2010 Groundwater Management Plan.

- a) A motion was made by Director Bertrando, seconded by Director Hanson, to adopt and approve the final 2010 Groundwater Management Plan. The motion carried by the following vote:

Ayes: 5 – Directors Bertrando, Cunningham, Hanson, Mills, Rosen

- b) A motion was made by Director Bertrando, seconded by Director Hanson, to approve amendment No. 1 to the Agreement for consulting services with Dr. Steve Bachman to increase the not to exceed contract amount by \$4,500 and authorize the Assistant General Manager to execute the Amendment. The motion carried by the following vote:

Ayes: 5 – Directors Bertrando, Cunningham, Hanson, Mills, Rosen

**7) SCADA**

- a) Mr. Paul and Mr. Kanno presented a report on the District's System control and Data Acquisition (SCADA) System.
- b) A motion was made by Director Bertrando, seconded by Director Hanson, to accept the report and authorize the General Manager to execute the agreement as modified with Tesco Controls,

**19) GENERAL MANAGER'S MONTHLY REPORT**

Received a report from Mr. McInnes for April, 2010.

**20) FUTURE MEETING AGENDA ITEMS**

This item will be considered by the Board at an adjourned meeting on May 13<sup>th</sup>.

8:56 p.m.....Meeting adjourned.

DATED: 6/9/10

MINUTES PREPARED BY:

Beth Horn  
BETH HORN, ASSISTANT BOARD SECRETARY

DATE APPROVED: 6/8/10

ATTEST:

Beth Horn  
BETH HORN, ASSISTANT BOARD SECRETARY

William C. Rosen  
WILLIAM C. ROSEN, PRESIDENT

## Proof of Resolution

The following agencies have adopted the plan as of July 30, 2007. Proof of adoption is attached.

<b>Agency Name</b>	<b>Resolution No. (if applicable)</b>
Santa Barbara County	Res. # 07-191
Cachuma Conservation and Release Board	Res. # 07-3
Cachuma Operation and Maintenance Board	Res. # 454
Carpinteria Sanitary District	Res. # R-196
Carpinteria Valley Water District	Res. # 849
Casmalia Community Services District	Not Numbered
Central Coast Water Authority	Res. # 07-02
City of Carpinteria	Res. # 5070
City of Guadalupe	Res. # 2007-11
City of Lompoc	Res. # 5414(07)
City of Santa Barbara	Res. # 07-059
City of Santa Maria	Res. # 2007-83
City of Solvang	Res. # 07-781
Cuyama Community Services District	Not Numbered
Goleta Sanitary	Res. #07-459
Goleta Water	Res. # 2007-13
Goleta West Sanitary	Res. # 07-707
La Cumbre Mutual	Not Numbered
Montecito Water	Res. # 2032
Santa Ynez River Water Conservation District	Res. # 613
Santa Ynez River Water Conservation District Improvement District No. 1	Res. # 646
Vandenberg Village Community Services District	Res. # 178-07



# County of Santa Barbara

## BOARD OF SUPERVISORS

### Minute Order

June 19, 2007

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**Present:** Supervisor Carbajal, Supervisor Wolf, Supervisor Firestone, Supervisor Gray and Supervisor Centeno

#### PUBLIC WORKS

File Reference No. 07-00630

**RE:** Consider recommendations for the Santa Barbara Countywide Integrated Regional Water Management Plan, as follows:

a) File the CEQA Notice of Exemption for the Santa Barbara Countywide Integrated Regional Water Management Plan, (POST); and

b) Adopt a Resolution approving the Santa Barbara Countywide Integrated Regional Water Management Plan allowing the County to seek Prop 50 funding.

**A motion was made by Supervisor Gray, seconded by Supervisor Centeno, that this matter be Acted on as follows:**

a) Receive and filed.

b Adopted.

**RESOLUTION NO. 07-191**

**The motion carried unanimously.**

**RESOLUTION OF THE  
BOARD SUPERVISORS OF THE COUNTY OF SANTA BARBARA  
BOARD OF DIRECTORS OF THE SANTA BARBARA COUNTY WATER AGENCY  
BOARD OF DIRECTORS OF THE SANTA BARBARA COUNTY FLOOD CONTROL  
& WATER CONSERVATION DISTRICT  
BOARD OF DIRECTORS OF THE LAGUNA COUNTY SANITATION DISTRICT  
STATE OF CALIFORNIA**

**ADOPTING THE SANTA BARBARA )  
COUNTYWIDE INTEGRATED REGIONAL )  
WATER MANAGEMENT PLAN ) RESOLUTION NO: 07-191**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP; and

**WHEREAS**, the IRWMP for Santa Barbara County area was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term, iterative, community-based process; and

**WHEREAS**, widespread adoption of the Santa Barbara Countywide IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

**NOW, THEREFORE BE IT RESOLVED**, that the Board of Supervisors of the County of Santa Barbara, Board of Directors of the Santa Barbara County Water Agency, the Board of Directors of the Santa Barbara County Flood Control & Water Conservation District, and the Board of Directors of the Laguna County Sanitation District hereby finds, determines, and declares as follows:

1. All of the above recitals are true and correct.
2. Hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

PASSED, APPROVED, AND ADOPTED by the Board of Supervisors of the County of Santa Barbara, Board of Directors of the Santa Barbara County Water Agency, the Board of Directors of the Santa Barbara County Flood Control & Water Conservation District, and the Board of Directors of the Laguna County Sanitation District, State of California, on this 19th day of June, 2007 by the following vote:

AYES: Supervisors Carbajal, Wolf, Firestone, Gray, Centeno

NAYS: None

ABSENT: None

ABSTAIN: None

ATTEST:  
MICHAEL F. BROWN  
CLERK OF THE BOARD

ACCEPTED AND AGREED:  
COUNTY OF SANTA BARBARA

By: Russ Barber

Deputy

By: Bruce Firestone

Chair, Board of Supervisors  
County of Santa Barbara

Chair, Board of Directors  
Santa Barbara Flood Control  
& Water Conservation District

Chair, Board of Directors  
Laguna County Sanitation District

Chair, Board of Directors  
Santa Barbara Water Agency

APPROVED AS TO FORM  
STEPHEN SHANE STARK  
COUNTY COUNSEL

By: Michael F. Brown

Deputy

**RESOLUTION NO. 07-3**

**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
CACHUMA CONSERVATION RELEASE BOARD TO ADOPT  
THE SANTA BARBARA COUNTYWIDE  
INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50, (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP, and other recently passed State bond measures include similar IRWMP requirements; and

**WHEREAS**, the Cachuma Conservation Release Board has participated as a Cooperating Partner along with other public agencies in Santa Barbara County through a comprehensive stakeholder process under a Memorandum of Understanding (MOU) to Develop an Integrated Water Management Plan, and have completed the first edition of the IRWMP, dated May 2007; and

**WHEREAS**, legal counsel has determined that the adoption of the IRWMP is exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15262 because the Plan is a planning study which identifies potential projects, programs, and policies for possible future actions; and

**NOW, THEREFORE, BE IT RESOLVED**, by the Cachuma Conservation Release Board as follows:

1. The Cachuma Conservation Release Board adopts the Santa Barbara Countywide IRWMP dated May 2007.
2. The adoption of the IRWMP is exempt from the requirements of CEQA pursuant to Sections 15262 of the State CEQA Guidelines.
3. The Board of Directors directs the Manager to file a Notice of Exemption in accordance with provisions of CEQA.

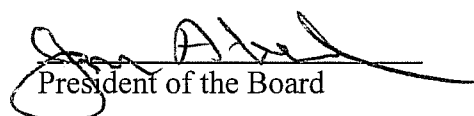
**BE IT FURTHER RESOLVED,** that this Resolution shall take effect immediately.

**PASSED, APPROVED AND ADOPTED** at a regular meeting of the governing board of the Cachuma Conservation Release Board held on the 25<sup>th</sup> day of June, 2007, by the following roll call vote:

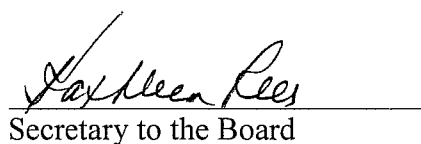
**AYES:** Directors Abel, Evans, Lieberknecht, Williams

**NAYES:** None

**ABSENT/ABSTAIN:** None

  
President of the Board

**ATTEST:**

  
Secretary to the Board

## **RESOLUTION NO. 454**

### **A RESOLUTION OF THE BOARD OF DIRECTORS OF THE CACHUMA OPERATION AND MAINTENANCE BOARD TO ADOPT THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50, (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP, and other recently passed State bond measures include similar IRWMP requirements; and

**WHEREAS**, the Cachuma Operation and Maintenance Board has participated as a Cooperating Partner along with other public agencies in Santa Barbara County through a comprehensive stakeholder process under a Memorandum of Understanding (MOU) to Develop an Integrated Water Management Plan, and have completed the first edition of the IRWMP, dated May 2007; and

**WHEREAS**, legal counsel has determined that the adoption of the IRWMP is exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15262 because the Plan is a planning study which identifies potential projects, programs, and policies for possible future actions; and

**NOW, THEREFORE, BE IT RESOLVED**, by the Cachuma Operation and Maintenance Board as follows:

1. The Cachuma Operation and Maintenance Board adopts the Santa Barbara Countywide IRWMP dated May 2007.
2. The adoption of the IRWMP is exempt from the requirements of CEQA pursuant to Sections 15262 of the State CEQA Guidelines.
3. The Board of Directors directs the General Manager to file a Notice of Exemption in accordance with provisions of CEQA.

**BE IT FURTHER RESOLVED,** that this Resolution shall take effect immediately.

**PASSED, APPROVED AND ADOPTED** at a regular meeting of the governing board of the Cachuma Operation and Maintenance Board held on the 25<sup>th</sup> day of June, 2007, by the following roll call vote:


**AYES:** Directors Abel, Evans, Lieberknecht, Loudon, Williams

**NAYES:** None

**ABSENT/ABSTAIN:** None

  
\_\_\_\_\_  
President of the Board

**ATTEST:**

  
\_\_\_\_\_  
Secretary to the Board

## **RESOLUTION NO. R-196**

### **A RESOLUTION OF THE BOARD OF DIRECTORS OF CARPINTERIA SANITARY DISTRICT ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 implementation funds will only be awarded to Regions with an adopted IRWMP; and

**WHEREAS**, the Santa Barbara Countywide IRWMP was developed with collaboration and cooperation from twenty-nine participating partner agencies in Santa Barbara County, each with an interest in regional water related issues; and

**WHEREAS**, adoption of Santa Barbara Countywide IRWMP by each of the participating partner agencies will validate the planning process and demonstrate the commitment to ongoing water management planning in the Region; and

**WHEREAS**, the Carpinteria Sanitary District may benefit through the receipt of grant funds for critical capital improvement projects through participation in the regional planning process, including adoption of the IRWMP

**NOW, THEREFORE, BE IT RESOLVED**, that the Carpinteria Sanitary District Board of Directors hereby finds, determines, and declares as follows:

- All of the above recitals are true and correct.
- The Carpinteria Sanitary District Board of Directors hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

**PASSED AND ADOPTED** by the Governing Board of the Carpinteria Sanitary District on June 5, 2007 by the following votes:

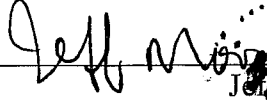
AYES: Director Treloar, Director Graf, Director Damron, Director Moorhouse,  
Director Horwitz


NAYS: None

ABSTENTIONS: None

Resolution No. R-196 was thereupon declared, carried, and adopted.  
Dated this 5<sup>th</sup> day of June 2007.

**APPROVED:**

  
\_\_\_\_\_  
President of the Governing Board of the  
CARPINTERIA SANITARY DISTRICT



**ATTEST:**

  
\_\_\_\_\_  
Mike Damron  
Secretary of the Governing Board of the  
CARPINTERIA SANITARY DISTRICT



I, Mike Damron, Secretary of the Governing Board of the CARPINTERIA SANITARY DISTRICT, hereby certify that the foregoing is a true copy of the resolution duly and legally adopted by the governing body of the DISTRICT at a legal meeting of said body duly and regularly held on June 5, 2007.

DATE CERTIFIED: June 5, 2007

## RESOLUTION NUMBER 849

### **A RESOLUTION OF THE BOARD OF DIRECTORS OF THE CARPINTERIA VALLEY WATER DISTRICT ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

WHEREAS, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP);

WHEREAS, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP, and other recently adopted State water bond measures include similar IRWMP requirements;

WHEREAS, staff of the Carpinteria Valley Water District, along with other public agencies in Santa Barbara County, have participated as Cooperating Partners under a "Memorandum of Understanding (MOU) to Develop an Integrated Regional Water Management Plan (IRWMP) in Santa Barbara County" and have completed the first edition of the Santa Barbara Countywide Integrated Regional Water Management Plan (SBCIRWMP), dated May 2007;

WHEREAS, Table 7-1, "Integration of Water Management Strategies, Regional Priorities, and Objectives –Short Term Priorities (5 years)" of the SBCIRWMP appropriately identifies Regional Priorities for water management, summarized as follows:

- § Reduce the potential for flooding;
- § Increase water supply reliability;
- § Strategically restore and replace wastewater infrastructure;
- § Ensure adequacy of water and wastewater facilities in disadvantaged communities;
- § Improve surface and ocean water quality and reduce beach closures;
- § Define groundwater contamination sources and prevention strategies;
- § Protect, restore, and enhance ecological processes in aquatic areas;
- § Ensure adequacy of water supplies during emergencies;
- § Develop programs and policies to increase groundwater recharge or decrease groundwater use; and
- § Encourage interagency cooperation in beginning to develop groundwater banking programs.

WHEREAS, the widespread adoption of the SBCIRWMP will ensure multi-agency participation in future water management planning efforts in the Santa Barbara County region; and

WHEREAS, District legal counsel has determined that adoption of the SBCIRWMP is exempt from the requirements of California Environmental Quality Act (CEQA).

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF CARPINTERIA VALLEY WATER DISTRICT AS FOLLOWS:

The Carpinteria Valley Water District hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan dated May 2007 and directs the General Manager to file a Notice of Exemption in accordance with the provisions of CEQA.

PASSED, APPROVED AND ADOPTED this 20<sup>th</sup> day of June, 2007, by the following vote:

AYES: Van Wingerden, Roberts, Drain, Lieberknecht

NAYES: None

ABSENT: Lemere

ABSTAIN: None

Resolution Number 849 was declared approved and adopted.

  
June Van Wingerden, Vice President

  
Charles B. Hamilton, Secretary

CASMALIA COMMUNITY SERVICES DISTRICT

P.O. BOX 207  
CASMALIA, CA 93429

Resolution Adopting the Santa Barbara Countywide  
Integrated Regional Water Management Plan

**Whereas**, in November 2002, the California voters approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002; Water Code Section 79560 *et seq.*), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan; and

**Whereas**, Proposition 50, Chapter 8 Implementation funds will only be awarded to regions with an adopted IRWMP; and

**Whereas**, a final IRWMP was developed in cooperation with 29 local agencies, special districts, private companies, and regional joint powers authorities as well as public participation through open meetings and public workshops; and

**Whereas**, the IRWMP identifies projects priority projects for local and regional agencies and districts, including the Casmalia Community Services District;

**Now, therefore, be it resolved** that the Board of Directors of the Casmalia Community Services District, hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

Passed and Adopted this 12 day of July, 2007



William Ostini, President  
Casmalia Community Services District

**RESOLUTION NO. 07- 02**

**RESOLUTION OF THE CENTRAL COAST WATER AUTHORITY  
ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED  
REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, In November 2002, the California electorate approved Proposition 50 (the Water Security, Clean drinking Water, Coastal and Beach Protection act of 2002), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to regions with an adopted IRWMP; and

**WHEREAS**, the IRWMP was developed in cooperation with 29 local agencies, special districts, private companies and regional joint powers authorities as well as public participation through 12 open noticed meetings and 8 public workshops and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long term iterative, community-based process;

**NOW, THEREFORE, BE IT RESOLVED**, that the Board of Directors hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.


**BE IT FURTHER RESOLVED** that this Resolution shall take effect immediately.

I certify that the foregoing Resolution No. 07-02 was adopted by the Board of Directors of the Central Coast Water Authority at a meeting held June 28, 2007.

  
Leo Trujillo, Chairman

[Seal]

Attest:

  
William J. Brennan  
Secretary to the Board of Directors

	VOTING PERCENTAGE	AYE	NAY	ABSTAIN	ABSENT
City of Buellton	2.21%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carpinteria Valley Water District	7.64%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Goleta Water District	17.20%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
City of Guadalupe	1.15%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Montecito Water District	9.50%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
City of Santa Barbara	11.47%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
City of Santa Maria	43.19%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Santa Ynez River Water Conservation District, Improvement District No. 1	7.64%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## **RESOLUTION NO. 5070**

### **A RESOLUTION OF THE CITY OF CARPINTERIA CITY COUNCIL ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, on November 2002, the California electorate approved Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 implementation funds will only be awarded to Regions with an adopted IRWMP; and

**WHEREAS**, the Santa Barbara Countywide IRWMP was developed with collaboration and cooperation from twenty-nine participating partner agencies in Santa Barbara County, each with an interest in regional water related issues; and

**WHEREAS**, adoption of Santa Barbara Countywide IRWMP by each of the participating partner agencies will validate the planning process and demonstrate the commitment to ongoing water management planning in the Region; and

**WHEREAS**, the City of Carpinteria may benefit through the receipt of grant funds for critical capital improvement projects through participation in the regional planning process, including adoption of the IRMWP.

**NOW, THEREFORE**, it is hereby resolved by the City Council of the City of Carpinteria, California, as follows:

- Finds that all of the above recitals are true and correct.
- Adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

**PASSED, APPROVED AND ADOPTED** this 9th day of July 2007, by the following called vote:


AYES: COUNCILMEMBERS: Clark, Armendariz, Carty, Ledbetter

NOES: COUNCILMEMBERS: None

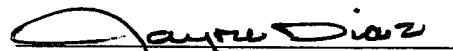
ABSENT: COUNCILMEMBERS: Stein

  
Mayor, City of Carpinteria

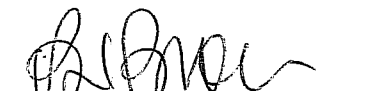
ATTEST:

  
City Clerk, City of Carpinteria

I hereby certify that the foregoing resolution was duly and regularly introduced and adopted at a regular meeting of the City Council of the City of Carpinteria held the 9<sup>th</sup> day of July, 2007.

  
City Clerk, City of Carpinteria

APPROVED AS TO FORM:

  
City Attorney

**RESOLUTION OF THE  
CITY COUNCIL OF THE CITY OF GUADALUPE, SANTA BARBARA COUNTY  
STATE OF CALIFORNIA**

**ADOPTING THE SANTA BARBARA )  
COUNTYWIDE INTEGRATED REGIONAL )  
WATER MANAGEMENT PLAN ) RESOLUTION NO: 2007-11**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP; and

**WHEREAS**, the IRWMP for Santa Barbara County area was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term, iterative, community-based process; and

**WHEREAS**, widespread adoption of the Santa Barbara Countywide IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

**NOW, THEREFORE BE IT RESOLVED**, that the City Council of the City of Guadalupe, Santa Barbara County hereby finds, determines, and declares as follows:

1. All of the above recitals are true and correct.
2. Hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

**PASSED, APPROVED, AND ADOPTED** by the City Council of the City of Guadalupe, Santa Barbara County, State of California, on this 26<sup>th</sup> day of June, 2007 by the following vote: Motion: Julian/Ponce

**AYES: 5**

**NAYS:**

**ABSENT:**

**ABSTAIN:**

**ATTEST:**

By: 

City Clerk

**COPY**

**CERTIFIED COPY**

**RESOLUTION NO. 5414(07)**

**A Resolution Of The Council Of The City Of Lompoc,  
County of Santa Barbara, State of California,  
Adopting The Santa Barbara Countywide  
Integrated Regional Water Management Plan**

WHEREAS, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

WHEREAS, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP; and

WHEREAS, the IRWMP for Santa Barbara County area was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term, iterative, community-based process; and

WHEREAS, widespread adoption of the Santa Barbara Countywide IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Lompoc hereby finds, determines, and declares as follows:


1. All of the above recitals are true and correct.
2. The Santa Barbara Countywide Integrated Regional Water Management Plan is hereby adopted.

The above and foregoing Resolution was proposed by Councilmember Holmdahl, seconded by Councilmember Siminski, and was duly passed and adopted by the Council of the City of Lompoc at its regular meeting on June 19, 2007, by the following electronic vote:

AYES: Councilmember(s): DeWayne Holmdahl, Ann Ruhge, Will Schuyler,  
Mike Siminski, and Mayor Dick DeWees.

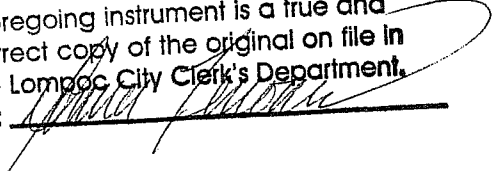
NOES: Councilmember(s): None

ABSENT: Councilmember(s): None

  
\_\_\_\_\_  
Dick DeWees, Mayor  
City of Lompoc

ATTEST:

  
\_\_\_\_\_  
Donna Terrones  
City Clerk, City of Lompoc

I HEREBY CERTIFY THAT THE  
foregoing instrument is a true and  
correct copy of the original on file in  
the Lompoc City Clerk's Department.  
ATTEST: 

## RESOLUTION NO. 07-059

### A RESOLUTION OF THE COUNCIL OF THE CITY OF SANTA BARBARA ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN

WHEREAS, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP);

WHEREAS, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP, and other recently adopted State water bond measures include similar IRWMP requirements;

WHEREAS, staff of the City of Santa Barbara, along with other public agencies in Santa Barbara County, have participated as Cooperating Partners under a "Memorandum of Understanding (MOU) to Develop an Integrated Regional Water Management Plan (IRWMP) in Santa Barbara County" and have completed the first edition of the Santa Barbara Countywide Integrated Regional Water Management Plan (SBCIRWMP), dated May 2007;

WHEREAS, Table 7-1, "Integration of Water Management Strategies, Regional Priorities, and Objectives –Short Term Priorities (5 years)" of the SBCIRWMP appropriately identifies Regional Priorities for water management, summarized as follows:

- Reduce the potential for flooding;
- Increase water supply reliability;
- Strategically restore and replace wastewater infrastructure;
- Ensure adequacy of water and wastewater facilities in disadvantaged communities;
- Improve surface and ocean water quality and reduce beach closures;
- Define groundwater contamination sources and prevention strategies;
- Protect, restore, and enhance ecological processes in aquatic areas;
- Ensure adequacy of water supplies during emergencies;
- Develop programs and policies to increase groundwater recharge or decrease groundwater use; and
- Encourage interagency cooperation in beginning to develop groundwater banking programs.

WHEREAS, the widespread adoption of the SBCIRWMP will ensure multi-agency participation in future water management planning efforts in the Santa Barbara County region; and

WHEREAS, the Environmental Analyst has determined that adoption of the SBCIRWMP is exempt from the requirements of California Environmental Quality Act (CEQA).

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SANTA BARBARA AS FOLLOWS:

The City of Santa Barbara hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan dated May 2007 and directs the Environmental Analyst to file a Notice of Exemption in accordance with the provisions of CEQA.

**RESOLUTION NO. 07-059**

STATE OF CALIFORNIA                     )  
  )  
COUNTY OF SANTA BARBARA            ) ss.  
  )  
CITY OF SANTA BARBARA                 )

I HEREBY CERTIFY that the foregoing resolution was adopted by the Council of the City of Santa Barbara at a meeting held on June 26, 2007, by the following roll call vote:

AYES:                     Councilmembers Brian B. Barnwell, Iya G. Falcone, Roger L. Horton, Grant House, Helene Schneider, Das Williams; Mayor Marty Blum

NOES:                    None

ABSENT:                 None

ABSTENTIONS:       None

IN WITNESS WHEREOF, I have hereto set my hand and affixed the official seal of the City of Santa Barbara on June 27, 2007.

  
  
Cynthia M. Rodriguez, CMC  
City Clerk/Services Manager

I HEREBY APPROVE the foregoing resolution on June 27, 2007.

  
Marty Blum  
Mayor

**RESOLUTION NO. 2007- 83**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA MARIA, CALIFORNIA, ADOPTING THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN FOR SANTA BARBARA COUNTY AND AUTHORIZING THE DIRECTOR OF UTILITIES AND ADMINISTRATIVE SERVICES TO EXPEND THE CITY'S PROPORTIONATE SHARE OF THE COSTS ASSOCIATED WITH THE PREPARATION OF A PROPOSITION 50 GRANT APPLICATION FOR ROUND TWO STEP ONE AND TWO OF THIS FUNDING**

**WHEREAS**, in November 2002, the California voters approved Proposition 50, also known as the Water Security, Clean Drinking Water, Coastal Beach Protection Act of 2002; and

**WHEREAS**, Proposition 50 funds will only be awarded to regions with an adopted Integrated Regional Water Management Plan; and

**WHEREAS**, the Integrated Regional Water Management Plan was developed through a comprehensive stakeholder process which included a planning process that involved the coordination of regional partners to determine the best objectives for the plan; and

**WHEREAS**, the wide-spread adoption of the Integrated Regional Water Management Plan ensures multi-agency participation and future water management planning efforts in the region; and

**WHEREAS**, the Integrated Regional Water Management Plan is California Environmental Quality Act Exempt;

**NOW, THEREFORE, IT IS HEREBY RESOLVED** by the City Council of the City of Santa Maria, California, as follows:

1. The City Council hereby approves the Integrated Regional Water Management Plan in Santa Barbara County (IRWMP), contingent upon the approval of the IRWMP by the County Board of Supervisors; and
2. The Director of Utilities and the Director of Administrative Services are hereby authorized to expend the City's proportionate share of the costs associated with the preparation of a Proposition 50 (Prop 50) grant application for Round Two, Step One and Two of this funding.

**PASSED AND ADOPTED** at a regular meeting of the City Council of the City of Santa Maria held this 19<sup>th</sup> day of June, 2007.

STATE OF CALIFORNIA                     )  
COUNTY OF SANTA BARBARA         ) ss.  
CITY OF SANTA MARIA                     )

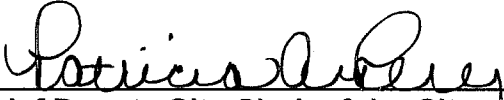
I, PATRICIA A. PEREZ, Chief Deputy City Clerk of the City of Santa Maria and ex officio Clerk of the City Council DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of Resolution No. 2007-83 which was duly and regularly introduced and adopted by said City Council at a regular meeting held June 19, 2007, and carried on the following vote:

AYES:           Councilmembers Orach, Patino, Zacarias, and Mayor Lavagnino.

NOES:           None.

ABSENT:        Councilmember Trujillo.

ABSTAIN:       None.

  
\_\_\_\_\_  
Chief Deputy City Clerk of the City of Santa Maria  
and ex officio Clerk of the City Council

## CUYAMA COMMUNITY SERVICES DISTRICT

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4885 Primero Street, P.O. Box 368  
New Cuyama, California 93254  
Phone (661) 766-2780 Fax (661) 766-2632  
E-mail ccsd@inreach.com

### **RESOLUTION ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, in November 2002, the California voters approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002; Water Code Section 79560 *et seq.*), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan; and

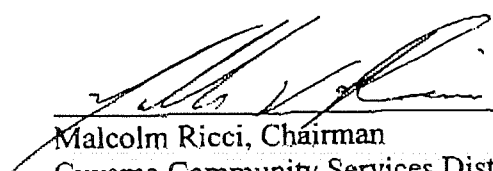
**WHEREAS**, Proposition 50, Chapter 8 implementation funds will only be awarded to regions with an adopted IRWMP; and

**WHEREAS**, a final IRWMP was developed in cooperation with 29 local agencies, special districts, private companies, and regional joint powers authorities, as well as public participation through open meetings and public workshops; and

**WHEREAS**, the IRWMP identifies the priority projects, the Wastewater Treatment Plant Effluent Disposal Project and the Water Tower Repair Project, of Cuyama Community Services District;

**BE IT THEREFORE RESOLVED** that the Board of Directors of the Cuyama Community Services District hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

PASSED AND ADOPTED this 11<sup>th</sup> day of July, 2007.

  
\_\_\_\_\_  
Malcolm Ricci, Chairman  
Cuyama Community Services District

## **RESOLUTION 07-781**

### **A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SOLVANG ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP, and other recently adopted State water bond measures include similar IRWMP requirements; and

**WHEREAS**, staff of the City of Solvang, along with other public agencies in Santa Barbara County, have participated as Cooperating Partners under a "Memorandum of Understanding (MOU) to Develop an Integrated Regional Water Management Plan (IRWMP) in Santa Barbara County" and have completed the first edition of the Santa Barbara Countywide Integrated Regional Water Management Plan (SBC IRWMP), dated May 2007; and

**WHEREAS**, Table 7-1, "Integration of Water Management Strategies, Regional Priorities, and Objectives –Short Term Priorities (5 years)" of the SBC IRWMP appropriately identifies Regional Priorities for water management, summarized as follows:

- Reduce the potential for flooding;
- Increase water supply reliability;
- Strategically restore and replace wastewater infrastructure;
- Ensure adequacy of water and wastewater facilities in disadvantaged communities;
- Improve surface and ocean water quality and reduce beach closures;
- Define groundwater contamination sources and prevention strategies;

- Protect, restore, and enhance ecological processes in aquatic areas;
- Ensure adequacy of water supplies during emergencies;
- Develop programs and policies to increase groundwater recharge or decrease groundwater use; and
- Encourage interagency cooperation in beginning to develop groundwater banking programs. and

**WHEREAS**, the widespread adoption of the SBC IRWMP will ensure multi-agency participation in future water management planning efforts in the Santa Barbara County region.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Solvang that the City of Solvang hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan dated May 2007.

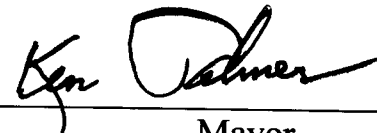
**PASSED. APPROVED AND ADOPTED** this 23<sup>rd</sup> day of July 2007, by the following vote:

**AYES:** Mayor Palmer, Council Members Boyle, Jackson, Richardson and Skytt

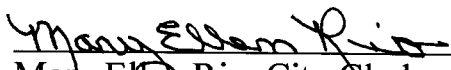
**NOES:**

**ABSTAIN:**

**ABSENT:**

  
\_\_\_\_\_  
Mayor

**ATTEST:**

  
\_\_\_\_\_  
Mary Ellen Rio, City Clerk

RESOLUTION NO. 07-459

**RESOLUTION OF THE GOLETA SANITARY DISTRICT BOARD OF DIRECTORS ADOPTING THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN PREPARED BY THE SANTA BARBARA COUNTYWIDE REGION**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50 (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP; and

**WHEREAS**, the IRWMP for Santa Barbara County area was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term, iterative, community-based process; and

**WHEREAS**, widespread adoption of the Santa Barbara Countywide IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

**NOW, THEREFORE BE IT RESOLVED**, that the Board of Directors of the Goleta Sanitary District hereby finds, determines, and declares as follows:

1. All of the above recitals are true and correct.
2. Hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

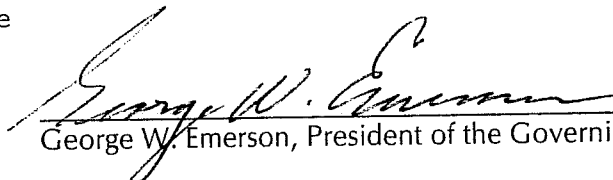
**PASSED, APPROVED, AND ADOPTED** by the Board of Directors of the Goleta Sanitary District on this 2nd day of July, 2007 by the following vote:

**AYES:** Emerson, Trantow, Fox, Carter, Majoewsky

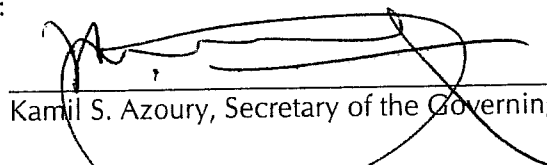
**NOES:** None

**ABSENT:** None

**ABSTAIN:** None

  
George W. Emerson, President of the Governing Board

Countersigned:

  
Kamil S. Azoury, Secretary of the Governing Board

**RESOLUTION NO. 2007-13**

**A RESOLUTION OF THE GOLETA WATER DISTRICT BOARD OF DIRECTORS  
ADOPTING THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN  
PREPARED BY THE SANTA BARBARA COUNTYWIDE REGION, AND  
AUTHORIZING A CEQA NOTICE OF EXEMPTION**

BE IT RESOLVED, THAT THE GOLETA WATER DISTRICT BOARD OF DIRECTORS HEREBY FINDS, DETERMINES, AND DECLARES AS FOLLOWS:

1. In November 2002, the California electorate approved Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP).
2. Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP.
3. The IRWMP for the watersheds of Santa Barbara County was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term, iterative, community-based process.
4. The widespread adoption of the Santa Barbara Countywide IRWMP ensures multi-agency participation and future water management planning efforts in the Region.
5. The IRWMP is exempt from the California Environmental Quality Act (CEQA) because the Plan is only a planning study which identifies potential projects, programs, and policies for possible future actions.
6. The Goleta Water District Board of Directors hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.
7. The General Manager is hereby authorized and directed to file a Notice of Exemption in accordance with provisions of the California Environmental Quality Act.

**PASSED AND ADOPTED** by the Board of Directors of the Goleta Water District this 12<sup>th</sup> day of June 2007 by the following roll call vote:

**AYE: Directors Bertrando, Cunningham, De Witt, Evans, Mills**

**NAY: None**

**ABSENT: None**

**ABSTAIN: None**

**ATTEST: None**



**BETH HORN  
DISTRICT SECRETARY**

  
**CHUCK EVANS, PRESIDENT  
BOARD OF DIRECTORS**

**RESOLUTION NO. 07-707**

**A RESOLUTION OF THE BOARD OF DIRECTORS  
OF THE GOLETA WEST SANITARY DISTRICT  
ADOPTING AN INTEGRATED REGIONAL WATER  
MANAGEMENT PLAN**

**WHEREAS**, in November 2002, the California electorate approved multiple statewide bond measures to fund water and natural resources projects and programs, including \$3.44 billion under Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 *et seq.*);

**WHEREAS**, Proposition 50 included \$500 million under Chapter 8 for projects included in Integrated Regional Water Management Plans (IRWMP); and

**WHEREAS**, the benefits of integrated planning for water management activities include increased efficiency and effectiveness, enhanced collaboration across agencies and stakeholders, and improved responsiveness to regional needs and priorities; and

**WHEREAS**, Proposition 50's Chapter 8 funds will only be awarded to regions which have adopted an IRWMP; and

**WHEREAS**, Santa Barbara County, cities, special districts (including Goleta West Sanitary District), joint powers authorities and private companies developed an IRWMP applicable across the county (Region) called the "Santa Barbara Countywide Integrated Regional Water Management Plan" (SBCIRWMP) as a planning document that identifies a broadly supported vision, guiding principles, goals, objectives and projects to enhance the beneficial uses of water for the Region; and

**WHEREAS**, the SBCIRWMP was developed through a comprehensive stakeholder process in which the public had opportunities to ask questions, provide comments and make recommendations, all of which were considered prior to preparation of the final SBCIRWMP; and

**WHEREAS**, the purpose of the SBCIRWMP is to ensure multi-agency participation in future water management planning efforts in the Region; and

**WHEREAS**, the County of Santa Barbara, as lead agency, has prepared a Notice of Exemption for the SBCIRWMP in accordance with CEQA; and

**WHEREAS**, the SBCIRWMP is meant to be complimentary to participating agencies' individual plans and programs and does not supersede such plans and programs, and the adoption of

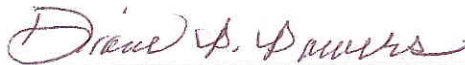
the SBCIRWMP does not prohibit or affect in any way a participating agency's planning efforts separate from that SBCIRWMP.

**NOW, THEREFORE, BE IT RESOLVED**, that the Board of Directors of the Goleta West Sanitary District hereby finds, determines and declares as follows:


1. The foregoing recitals are true and correct.
2. The District Board of Directors hereby adopts the SBCIRWMP in the form presented to the Board at this meeting.

THE FOREGOING RESOLUTION was adopted at the regular meeting of the District Board held on the 3<sup>rd</sup> day of July, 2007 by the following vote:

<b>AYES:</b>	Bearman, Geyer, Lewis, McFarland, Meyer
<b>NOES:</b>	None
<b>ABSENT:</b>	None
<b>ABSTAIN:</b>	None

  
\_\_\_\_\_  
Diane P. Powers, Secretary

**ATTEST:** (SEAL)

  
\_\_\_\_\_  
Larry D. Meyer, President

It was moved by Mr. Sands, seconded by Mr. Wathne, to receive and file the report as presented. Motion carried.

March-April 2007 Financial Statement & Cash Report

It was moved by Mr. Sands, seconded by Mr. Wathne, to receive and file March-April 2007 Financial Statement & Cash Report as recommended by the Finance Committee. Motion carried.

2006 Audited Financial Statement

It was moved by Mr. Sands, seconded by Mr. Wathne, to receive and file the 2006 Audited Financial Statement as prepared by CPA Gary Smith. Motion carried. Copies of the Statement will be available at the Annual Meeting.

Approval of Integrated Regional Water Management Plan (IRWiMP)

The County of Santa Barbara requires approval of the Plan by all Districts participating in creating the plan. Board members each received a copy for review. It was moved by Mr. Wathne, seconded by Mr. Sands, to approve the Integrated Regional Water Management Plan as prepared. Motion carried.

Annual Meeting – Tuesday June 26<sup>th</sup> 7:00 PM at the Vieja Valley School

The format of the meeting was discussed and reports assigned.

General Manager's Report

A. State Water Cutback Memo

Mr. Alvarado is requesting that the City of Santa Barbara transfer 310 AF of state water to La Cumbre at an extra cost of \$25.00/AF in addition to the normal CCWA delivery cost. It was moved by Mr. Sands, seconded by Mr. Wathne, to direct the General Manager to negotiate the purchase of additional water from the City of Santa Barbara in light of the letter dated 6/11/07 from the CCWA indicating cutbacks are yet to be determined.

B. Edison Rate Structure

La Cumbre Mutual Water Company signed a new Edison rate schedule for the Tranquila booster station. The new rate will allow La Cumbre to save an estimated \$6,109.60 per year.

Committee Reports

A. Long-Range Planning

## **RESOLUTION NO. 2032**

### **RESOLUTION OF THE BOARD OF DIRECTORS OF THE MONTECITO WATER DISTRICT ADOPTING THE SANTA BARBARA COUNTYWIDE INTEGRATED REGIONAL WATER MANAGEMENT PLAN**

**WHEREAS**, In November 2002 the California electorate approved Proposition 50, (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Water Code Section 79560 et seq), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP, and other recently adopted State water bond measures include similar IRWMP requirements; and

**WHEREAS**, staff of the Montecito Water District, along with other public agencies in Santa Barbara County, have participated as Cooperating Partners under a "Memorandum of Understanding (MOU) to Develop an Integrated Regional Water Management Plan (IRWMP) in Santa Barbara County" and have completed the first edition of the Santa Barbara Countywide Integrated Regional Water Management Plan (SBCIRWMP), dated May 2007; and

**WHEREAS**, Table 7-1, "Integration of Water Management Strategies, Regional Priorities, and Objectives –Short Term Priorities (5 years)" of the SBCIRWMP appropriately identifies Regional Priorities for water management, summarized as follows:

- Reduce the potential for flooding;
- Increase water supply reliability;
- Strategically restore and replace wastewater infrastructure;
- Ensure adequacy of water and wastewater facilities in disadvantaged communities;
- Improve surface and ocean water quality and reduce beach closures;
- Define groundwater contamination sources and prevention strategies;
- Protect, restore, and enhance ecological processes in aquatic areas;
- Ensure adequacy of water supplies during emergencies;
- Develop programs and policies to increase groundwater recharge or decrease groundwater use; and
- Encourage interagency cooperation in beginning to develop groundwater banking programs; and

**WHEREAS**, the widespread adoption of the Santa Barbara County IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

**WHEREAS**, adoption of the SBCIRWMP is exempt from the requirements of California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15262 because the IRWMP is a planning study which identifies potential projects, programs, and policies for possible future actions; and Sections 15306, 15307, and 15308 because the IRWMP consists of basic data and information collection and includes possible actions, subject to future adoption and approval, which would protect natural resources and the environment.

**NOW, THEREFORE, BE IT RESOLVED** That THE BOARD OF DIRECTORS OF THE MONTECITO WATER DISTRICT hereby finds, determines, and declares as follows:

Board of Directors of the Montecito Water District hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

The vote on Resolution No. 2032 by roll call resulted as follows:

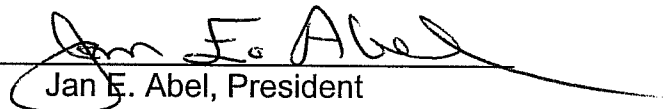
AYES: Directors Abel, Frye, Morgan, and Wilson

NOES: None

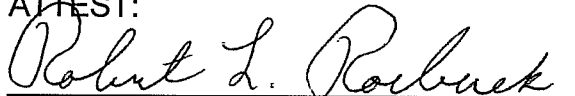
ABSENT: Director Shaikewitz

**PASSED, APPROVED AND ADOPTED** by the Board of Directors of the Montecito Water District this 19th day of June 2007.

APPROVED:

  
Jan E. Abel, President

ATTEST:

  
Robert L. Roebuck, Secretary

**RESOLUTION NO. 613**

**RESOLUTION OF THE BOARD OF DIRECTORS OF  
THE SANTA YNEZ RIVER WATER CONSERVATION DISTRICT  
ADOPTING THE SANTA BARBARA COUNTYWIDE  
INTEGRATED REGIONAL WATER MANAGEMENT PLAN  
PREPARED BY THE TWENTY-NINE COOPERATING PARTNERS  
IN SANTA BARBARA COUNTY**

**WHEREAS**, in November 2002, the California electorate approved Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq.), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

**WHEREAS**, Proposition 50, Chapter 8 Implementation funds will only be awarded to regions with an adopted IRWMP; and

**WHEREAS** the Santa Barbara Countywide IRWMP was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term iterative, community-based process; and

**WHEREAS**, the widespread adoption of the Santa Barbara Countywide IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

**WHEREAS**, the Santa Barbara County staff has reviewed the Santa Barbara Countywide IRWMP, and has determined that the IRWMP is exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines; and

**WHEREAS**, Santa Barbara County will prepare and file a Notice of Exemption for the Santa Barbara Countywide IRWMP in accordance with CEQA and the County's procedures on behalf of the twenty-nine cooperating partners for implementation of CEQA.

**WHEREAS**, the Board of Directors notes that it cannot presently verify certain factual information in Said Plan, which in some circumstances may require further analysis, including the status of groundwater basins within its jurisdiction.

**NOW, THEREFORE, BE IT RESOLVED**, that the Board of Directors of the Santa Ynez River Water Conservation District hereby finds, determines and declares as follows:

1. All of the above recitals are true and correct.
2. The Board of Directors hereby adopts the Santa Barbara Countywide Integrated Regional Water Management Plan.

**WE, THE UNDERSIGNED**, being the duly qualified and acting President and Secretary, respectively, of the Board of Directors of the Santa Ynez River Water Conservation District do hereby certify that the above and foregoing resolution was duly adopted and passed by the Board of Directors of said District at a regular meeting duly held on the 6th day of June, 2007, by the following roll call vote:

**AYES**, and in favor thereof, Directors:

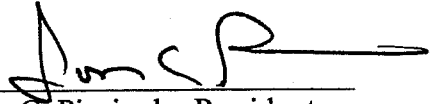
Art Hibbits  
Steve Jordan  
Wallace Marsh  
Jeffrey Newton  
Jon Picciuolo

**NOES**, Directors:

None

**ABSENT/ABSTAINING**, Directors:

None

  
Jon C. Picciuolo, President  
Bruce A. Wales, Secretary

A RESOLUTION OF THE BOARD OF TRUSTEES  
OF THE SANTA YNEZ RIVER WATER CONSERVATION DISTRICT  
IMPROVEMENT DISTRICT NO. 1  
ADOPTING THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN FOR THE  
SANTA BARBARA COUNTY REGION

WHEREAS, In November 2002, the California electorate approved Proposition 50, (the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79560 et seq)), which included \$500 million under Chapter 8 for projects included in an Integrated Regional Water Management Plan (IRWMP); and

WHEREAS, Proposition 50, Chapter 8 Implementation funds will only be awarded to Regions with an adopted IRWMP; and

WHEREAS, on August 15, 2006, the Santa Ynez River Water Conservation District, Improvement District No. 1 Board of Trustees approved the Memorandum of Understanding to develop an IRWMP as a cooperating partner; and

WHEREAS, the IRWMP for the Santa Barbara County Region was developed through a comprehensive stakeholder process and provides for ongoing data gathering, planning, design, implementation, and evaluation through a long-term, community-based process; and

WHEREAS, the widespread adoption of the Santa Barbara County IRWMP ensures multi-agency participation and future water management planning efforts in the Region; and

WHEREAS, the Board of Trustees has reviewed the Santa Barbara County IRWMP, and has determined that the IRWMP is exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15262 because the Plan is a planning study which identifies potential projects, programs, and policies for possible future actions; and Sections 15306, 15307, and 15308 because the Plan consists of basic data and information collection and includes possible actions, subject to future adoption and approval, which would protect natural resources and the environment; and

WHEREAS, the General Manager will prepare a Notice of Exemption for the Santa Barbara County Integrated Regional Water Management Plan in accordance with CEQA and the District's procedures for the Implementation of CEQA; and

NOW, THEREFORE, BE IT RESOLVED, that Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No. 1 hereby finds, determines, and declares as follows:

1. All of the above recitals are true and correct.
2. The adoption of the Santa Barbara County IRWMP is hereby determined to be exempt from the requirements of CEQA pursuant to Sections 15252, 15306, 15307, and 15308 of the State CEQA Guidelines.
3. The General Manager is hereby authorized and directed to file a Notice of Exemption in accordance with provisions of the California Environmental Quality Act.
4. The Board of Trustees hereby adopts the Santa Barbara County Integrated Regional Water Management Plan.

WE, THE UNDERSIGNED, being duly qualified and acting President and General Manager/Secretary, respectively, of the Board of Trustees of the Santa Ynez River Water Conservation District, Improvement District No. 1, do hereby certify that the above and foregoing Resolution was duly and regularly adopted and passed by the Board of Trustees of said District at a regular meeting held on the 19<sup>th</sup> day of June, 2007, by the following roll call vote:

AYES, Trustees:

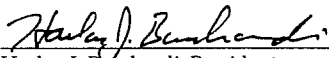
Harlan Burchardi  
Lee Bettencourt  
Matthew Loudon  
Harry Poor

NOES, Trustees:

None

ABSENT, Trustees:

Jeff Clay

  
Harlan J. Burchardi, President

Attest:

  
Chris Dahlstrom, General Manager/Secretary

# VANDENBERG VILLAGE COMMUNITY SERVICES DISTRICT

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3757 Constellation Road • Vandenberg Village • Lompoc, CA 93436  
Telephone: (805) 733-2475 • Fax: (805) 733-2109



*"Pride in Community Service"*

<http://vvcasd.org>

[info@vvcasd.org](mailto:info@vvcasd.org)

## **RESOLUTION 178-07**

**June 5, 2007**

**BY THE BOARD OF DIRECTORS OF  
VANDENBERG VILLAGE COMMUNITY SERVICES DISTRICT  
APPROVING THE SANTA BARBARA COUNTYWIDE  
INTEGRATED REGIONAL WATER MANAGEMENT PLAN (IRWMP)**

WHEREAS, various local agencies, special districts, private water companies, and regional joint powers authorities are responsible for managing water and wastewater in Santa Barbara County; and

WHEREAS, in August 2006 the Board of Directors of Vandenberg Village Community Services District (VVCSD) was among 29 cooperating partners that signed a memorandum of understanding (MOU) to develop a countywide IRWMP to promote integrated assessment and planning for water quantity and water quality issues; and

WHEREAS, the County Water Agency contracted with CH2MHill to conduct a series of cooperating partners meetings and stakeholder workshops that have been open to the public to gather information and suggestions that have been incorporated into the comprehensive plan; and

WHEREAS, VVCSD contributed \$4,494 toward the plan, supported and participated in its development, and nominated three projects which have been included in the plan.

NOW, THEREFORE, BE IT RESOLVED that Board of Directors of the Vandenberg Village Community Services District approves the Santa Barbara Countywide IRWMP, dated May 2007.

PASSED AND ADOPTED by the Board of Directors of the Vandenberg Village Community Services District this 5<sup>th</sup> day of June, 2007 upon motion by Director Wyckoff, seconded by Director Blair and as approved by the following vote:

Roll call vote, to wit:

AYES: Directors Blair, Brooks, Fox, Rowland and Wyckoff

NOES: None

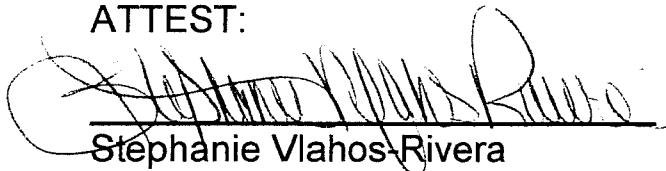
ABSENT: None

ABSTAIN: None

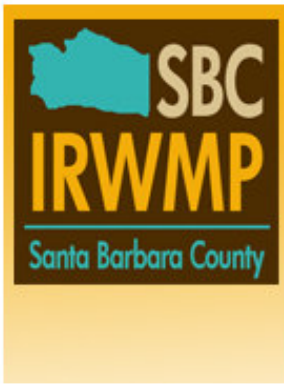


Donald Rowland, President  
Board of Directors

ATTEST:



Stephanie Vlahos-Rivera  
Secretary to the Board of Directors



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

### **Background**

In November of 2004, the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) released the *Integrated Regional Water Management Grant Program Guidelines* which set forth the requirement of an adopted Integrated Regional Water Management (IRWM) Plan as a pre-requisite to applying for and obtaining IRWM grant monies. In response to the need for development of such a plan, the Santa Barbara County Water Agency, along with 29 other jurisdictions, districts, JPAs, private water companies and others organized to form the “Cooperating Partners” group. The first Memorandum of Understanding (MOU) was developed and executed in 2005 with the expressed intent of IRWM plan development and application for Proposition 50 monies. The MOU provided for judicious Cooperating Partners cost sharing to write the IRWM Plan and established a governance structure for overall IRWM in Santa Barbara County.

The governance structure has evolved over time, partly in response to new legislation and DWR Guidelines, to wit, Prop 84, and partly because the Cooperating Partners identified areas for improvement. As such, two subsequent MOUs (2009, 2010) have been developed and executed. Both of the subsequent MOUs have built upon the original MOU; typical language includes the purpose of the agreement and provisions for financing, indemnification, settlement of disputes, and length and termination of the agreement. They require only the signatures of the authorized representatives of the organizations. The MOUs serve to further and strengthen the IRWM process and goals for collaborative and integrated regional water management development. The March 2010 MOU added language enabling expanded membership, establishing a more inclusive governance structure and defining roles and decision-making processes. Generally, the MOU provides a basis and commitment to coherent and enduring IRWM efforts throughout the region.

### **Santa Barbara County 2007 IRWM Plan**

The County’s first IRWM Plan was adopted in 2007 and enabled the County to apply for funds under Proposition 50. The County successfully obtained \$25 million in grant monies for 14 projects throughout the region. The State Grant Agreement was signed

in December, 2008 and at the date of print, three of the 14 original project funded under Prop 50 have been successfully completed.

The 2007 IRWM Plan conformed to the Guidelines in effect at the time and will need to be updated in compliance with the new IRWM Plan Guidelines released by DWR in August, 2010. Pursuant to an update, Santa Barbara County applied for planning grant funds under Prop 84 and anticipates updating the IRWM Plan to current plan standards by 2012.

Prior to an update to the IRWM Plan, however, Santa Barbara County is seeking implementation grant monies to fund actual projects through Proposition 84. The Proposition 84 Guidelines for Implementation grant funds stipulate that in order for projects to be eligible for consideration and potential funding, projects must be either included within the existing IRWM Plan or have been added to the project list for the IRWM Plan according to the procedures outlined in the Plan. In the case of Santa Barbara County, the 7 projects included in the Implementation Grant Application were added through the Biennial Review process outlined in the 2007 IRWM Plan.

### **Biennial Review – IRWM Plan Adaptive Management**

As part of an overall adaptive management strategy for the evaluation of projects and plan performance, the 2007 IRWM Plan states that the Cooperating Partners will conduct a biennial review of the IRWM Plan and evaluate Santa Barbara IRWM Plan's objectives, priorities, water management strategies, and project lists. The IRWM Plan also commits the Cooperating Partners to modifying the aforementioned Plan elements as appropriate. Specifically, the 2007 IRWM Plan describes the implementation of the adaptive management framework as follows:

*The IRWMP's overall adaptive management framework will be implemented in the following manner in accordance with the established governance practices described in Section 1:*

- 1. IRWMP managers will conduct a biennial review and produce a 5-year report summarizing progress made in achieving IRWMP goals, including the tracking of funded projects, modifications to projects, and development of new projects as a result of the plan. The results of the biennial review and the 5-year report will be posted on the IRWMP Web site (<http://www.countyofsb.org/pwd/water/irwmp.htm>). The performance of implemented projects will be compared to original project objectives to ensure objectives were met.*

*2. IRWMP objectives, priorities, and water management strategies will be evaluated during the biennial review and modified appropriately. The need to develop different projects to better meet the plan objectives and regional issues will be considered, as will the need to modify existing projects. Projects that may be deleted (for example, because their purpose has been met through another project or because conditions have changed) also will be considered at this time.*

*3. Minor adjustments to planning assumptions, operations, or actions will be adopted as necessary. If significant changes to the approved IRWMP are found to be required in the biennial review or the 5-year IRWMP report, the plan will be revised and submitted for approval by Cooperating Partners as necessary.*

## **Biennial Review – Implementation**

In conformance with the above, the Cooperating Partners undertook the biennial review process between 2009 and 2010 through an extensive and exhaustive public process commencing in September 2009. Over the course of 8 months, the Cooperating Partners and the Steering Committee met no less than once per month to:

- Identify, define and scope the Region's issues, conflicts and objectives in the categories of water demand, operational efficiency and transfers, water supply, flood management, water quality and resource stewardship.
- Solicit and develop projects that align with the Region's goals and objectives as identified and updated.
- Solicit and develop projects that align with DWR's Program Preferences.
- Outline the objective and scientific processes employed in the selection of projects for inclusion into the Implementation Grant application.
- Determine criteria and sub-criteria for project selection process.
- Score, rank and select projects for inclusion in the Implementation grant application.
- Review the draft and final list of selected projects.

As a result of the biennial review, the Region identified the following objectives:

- Increase water use efficiency including water reuse and water conservation measures to increase and extend existing water supplies.
- Improve operational efficiency, transfers, and supply reliability
- Increase water supply in the least costly, most efficient, and most reliable manner
- Improve management of groundwater basins through conjunctive use
- Improve flood management to protect people, property, and ecosystems
- Improve water quality
- Improve quality of groundwater, stormwater runoff, agricultural water runoff, and treated water discharges to regional water bodies
- Improve water management to protect and restore ecosystems and wildlife habitat

Further, the biennial review process included 78 new projects in the IRWM Plan, seven of which were selected for inclusion in the implementation grant application projects based on their ranking with the established selection criteria and alignment with the Region 's objectives and DWR's Prop 84 program preferences.

The selected projects for the Implementation Grant application include:

- I. City of Santa Maria's Untreated Water Landscape Irrigation Project – Extends an existing groundwater landscape irrigation system from the City's Civic Center area to facilities with landscaped area, including Allen Hancock College, Miller Elementary school, Santa Maria High school, Santa Maria Fairpark & Adam Basin. The project allows for water use efficiency while enhancing water management efforts through delivery systems that utilize an abundant groundwater resource from the Santa Maria groundwater basin. The irrigation system consists of several old production water wells that were removed from domestic supply due to high nitrate concentrations. The wells will be rehabilitated & put into service to water turf & other landscapes through a piping system that is isolated

from the domestic supply piping. The efficient match of water resources to water use augments drought preparedness efforts within the region. Further, water reliability is strengthened by decreasing the burden on State Water Project water.

2. City of Santa Maria's LeakWatch – Allows the City to complete the installation of a water meter system which reads water use data in real time. With the LeakWatch system, real-time data is broken down to show usage by hour, which could indicate a water leak or over use if there is 24-hour activity. The system includes base stations, converted water meter registers, transmitters & associated software. Data provided by the fixed-base system is used to detect leaks & assist customers in making better decisions regarding water usage. The project estimates 250 AFY of conservation in the domestic water supply. The project will also assist with water shortage contingency planning by allowing the City to track hourly water use to assure that customers are abiding by restrictions on water use or schedules.
3. City of Guadalupe's Recycled Water Feasibility Study – The study will include a market assessment & identification of required recycled water distribution facilities as well as a cost/benefit analysis to evaluate the feasibility of supplying recycled water to the City of Guadalupe & surrounding property owners, all of whom are dependent on groundwater. The market assessment will identify potential recycled water customers, both within & adjacent to the City's boundaries & match recycled supply to potential demand. Potential customers include existing sports parks, community parks, schools, cemeteries, produce packing plants & agricultural areas. Delivery of recycled water to agricultural customers outside the service area will be evaluated differently due to the impact on overall revenues. Once reuse categories are prioritized & sets of potential customers are identified, distribution system alternatives will be explored to maximize recycled water use with the lowest capital O&M costs. The economic of recycled water distribution systems are such that larger demand will dictate the alignments of backbone pipeline routes. After alternative alignments are identified for up to three different customer sets, the required pipelines pump stations & storage reservoirs can be sited. The study will also discuss the feasibility, limitations & potential water quality impacts or groundwater recharge & compare the potential benefits with the delivery of recycled water to existing potable water customers.
4. Lompoc Valley Regional Leak Detection Program – The project is collaboration between the City of Lompoc, the Mission Hills CSD & the Vandenberg Village

CSD to complete a leak detection audit of the water distribution systems of the 3 utilities & develop & implement a 5-year plan for the repair and/or replacement of leaky water services & mains. Leak detection reports will be reviewed to determine which sections of distribution systems show the highest percentage of system leaks. A plan will be prepared for leak repair, targeting the areas with the highest percentage of leaks for sequencing of repairs.

5. Central Coast Water Authority's Pipeline Erosion Damage Repair Project – The CCWA owns & operates a pipeline that delivers water from the Santa Ynez Pumping Plant located in the Santa Ynez Valley to Lake Cachuma. There are 2 locations along the pipeline where there is exposure due to erosion of overlying soils caused by high flow releases from Bradbury Dam or high flow storm events & associated flow of water over the pipeline's alignment. These types of pipeline exposures place the pipeline at risk for failure because the exposed pipe has lost the structural confinement of backfill, an important strengthening component of the pipeline & because the exposed pipeline will bridge & obstruct water flow, which will subject the pipeline to strong external forces arising from the impact of high flow water. The project will implement both interim & long term fixes to protect the sections of the exposed pipe from further damage. The pipeline was originally constructed in the 1960's for the purposes of delivering water from Lake Cachuma to the Santa Ynez Valley. CCWA acquired the pipeline in the mid-1990's to complete its water conveyance system for its southern Santa Barbara County participants. The pipeline is comprised of a nominal 30" diameter pipe, 12 miles long & is either cement mortar line/coal tar enamel coated steel pipe or modified pre-stressed concrete cylinder pipe. The Santa Ynez Pumping Plant will discharge water into the pipeline at flow rates as high as 10,000 gpm, with a shutoff head of 376'.
6. Goleta Sanitary District's Wastewater Treatment Plant Upgrade – Upgrading the existing wastewater treatment facilities in order to be able to treat 100% of the wastewater from Goleta Valley to a full secondary treatment level. The current facilities have a design flow of 9 MGD & can treat 100% of flow to the primary level, but only 4.38 MGD can be treated to the secondary standards. The project will need to increase the capacity of the secondary treatment structures without increasing the overall capacity of the treatment plant. Construction will include a new biofilter, an aeration basin, two new secondary sedimentation tanks & the conversion of an existing stabilization basin into a flow equalization basin.

7. City of Goleta's San Jose Creek Capacity Improvement & Fish Passage Project – Removal & reconstruction of the San Jose Creek Flood Control Channel & reconstruction of the Hollister Ave. bridge over San Jose Creek. When completed, the multi-objective project will increase flood conveyance capacity, reduce flood hazard & provide fish passage for migrating endangered steelhead trout. The project will remove over 200 residential, commercial & industrial properties from the regulatory floodplain. The new channel will include an articulated concrete bottom allowing fish passage during low flow events, reduce adverse water quality impacts to Goleta Slough & increase groundwater recharge.

The following exhibits are included in this document:

- MOU 2005
- MOU 2009
- MOU 2010
- Regional Objectives
- Project Selection Process Documents

In summary, as the Cooperating Partners were a party to the biennial review, sanctioned its implementation and fully and actively involved in the process, signatures of each of the MOU signatories/authorized representatives are below. These signatures were executed in parts:

Signature of the Agency Representative:

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Date: \_\_\_\_\_

**Draft Meeting Minutes  
Proposition 84  
Joint Steering Committee – Project Proponent Meeting  
Wednesday, August 4, 2010  
2:00 p.m. – 4:00 p.m.**

**Location:** CCWA, 255 Industrial Way. Buellton, CA

**Conference Phone Number:** 805.681.5400  
**Passcode:** 783742

***Attendees***

Steve Kahn, City of Santa Maria; Drew Dudley, CCWA; John Brady, CCWA; Susan Segovia, City of Lompoc, Kathleen Werner, Goleta Sanitary District; Ken Yankee, City of Buellton; Marti Schultz, City of Goleta; Matt Naftaly, Santa Barbara County Water Agency; Jane Gray, Dudek

***On the Conference Call***

Hillary Hauser, Heal the Ocean; Rob Almy, GEI; Kathy Caldwell, CH2MHill

**Proceedings**

The meeting began at 2:06 p.m. and was brought to order by Matt Naftaly. Everyone in the room and on the line introduced themselves, there was no comment for items not on the agenda and the meeting minutes from the July 8, 2010 meeting were approved.

Matt Naftaly began the conversation by stating that the Guidelines and PSPs for Propositions 84 and 1E had been released. He gave a brief overview of Prop 1E by stating that the deadline for applications was April 15, 2010, that there is \$212 million Statewide for projects, that the funding cap per project is \$30 million and that entities can submit more than one project. In addition, entities seeking funds under Prop 1E may be associated with an IRWM region, however, that is not a requirement; it is a parallel process and association with an IRWM region may strengthen the project, however entities are free to prepare applications independently and administer the funds (without the County being involved). Mr. Naftaly also stated that the application deadline for Planning grant application is September 28, 2010 and January 7, 2011 for Implementation grant applications.

Rob Almy initiated a discussion on the schedule for the Planning grant application by stating that since this application was due first, it would need the group's consideration. He also summarized some of the conversations the Central Coast group had pursuant to collaborating fund area wide on the topics of Climate Change and Salt and Nutrient Management Plans. Based on comments from DWR and the general information that DWR is requiring on the topic of Climate Change at this time, the Central Coast region interests decided that it was best to focus the discussion locally and talk about the potential effects of Climate Change within each IRWM region. DWR is working with USEPA Region 9 on a Climate Change Handbook which will be out in draft form in October and will be finalized in January, 2011. Consequently, for purposes of the 1<sup>st</sup> Round of Planning grants and necessary SOW formulation for inclusion in the IRWM Plan updates, DWR expects to see a discussion on lowering GHGs, "Vulnerability Analysis" and

adoption of “No Regret” strategies and methodologies i.e. conservation measures. However, at a later date, they will be requiring more detailed discussions in the plans. Mr. Almy also summarized the comments Central Coast representatives had pursuant to a Central Coast funding area wide discussion for the IRWM Plan update on Salt and Nutrient Management Plans. As with Climate Change, it was agreed that each IRWM region would be best served by developing specific discussions on Salt and Nutrient Management.

Kathy Caldwell discussed the schedules that she prepared for the Planning grant application and the Implementation grant application. She reiterated the deadlines for September 28, 2010 and January 7, 2011, respectively and indicated that internally, the Implementation grant application would be completed by December 17, 2010. In order to meet these deadlines, she emphasized the importance of the Kick-Off meeting scheduled for August 19, 2010. At the Kick-Off meeting, project proponents will be given a “Project Assessment Form” which will be about 10 pages in length and will require all proponents to provide essential components and details about their projects, budgets and work plans. The “Project Assessment Forms” will be required to be received back by CH2MHill within a week of their initial distribution. Ms. Caldwell said she was willing to work with people to help them fill the forms out, but that provision of complete information requested was critical in order to have a competitive and thorough application that met the standards set out in the Guidelines. Mr. Naftaly stated that if projects were unable to provide full project details or successfully complete the forms to the satisfaction of CH2MHill, those projects would be removed from the project list. Ms. Caldwell encouraged everyone to have a read of the Implementation Guidelines and tables since that would be a good indication of the amount and level of detail that CH2MHill would be collecting in the Project Assessment Forms.

Matt went on to talk about a reallocation of the \$150,000 originally requested by the City of Carpinteria. It was suggested that the options were: 1) to redistribute it equally among the remaining projects; 2) to reduce the overall grant request by \$150,000; or 3) to see what other projects could be added. Others suggested that if the group was going to add a project that the project be identified based on its ability to meet a presently unmet or under-represented priority. Another suggestion was to review the overall ranking of projects and see which projects were next in line, rank wise, and potentially fund that project. Finally, it was brought up that the group had already come up with a strategy to re-allocate money in case a project dropped out. The procedure discussed and prior meetings and also agreed upon was that if a project dropped off the list and its requested amount was under \$500,000 the Steering Committee would proportionally add the amount to the remaining projects, however, if the amount was over \$500,000, the Steering Committee would bring a recommendation to the Cooperating Partners group for a vote. The majority of members present-Steering Committee and Project Proponents agreed that since there was a procedure already voted upon, in the interest of consistency, that procedure should be followed. Hence, the SC moved to reallocate the \$150,000 previously requested by the City of Carpinteria to the remaining 7 projects. Mr. Naftaly said that this guideline would be followed should any other projects be withdrawn or removed from the project list in the future.

The next meeting was confirmed for August 19, 2010 in the afternoon at a location to be determined.

The meeting adjourned at 3:44 p.m.

**Draft Meeting Minutes**  
**PROPOSITION 84**  
**COOPERATING PARTNERS MEETING**  
**Thursday, August 19, 2010**  
**1:30 p.m. – 3:30 p.m.**

**Location:** Lompoc Water Treatment Plant, 601 E. North Ave., Lompoc, CA 93438

**Conference Phone Number:** 805.681.5400  
**Passcode:** 295029

***Attendees***

Susan Segovia, City of Lompoc; Jagit Kaur, CH2MHill; Kathy Caldwell, CH2MHill; Drew Dudley, CCWA; Hillary Hauser, Heal the Ocean; Rebecca Bjork, City of Santa Barbara; Cindy Allen, VVCSD; Janet Gingras, COMB; Teresa Reyburn, City of Santa Maria; Matt Naftaly, Santa Barbara County Water Agency; Kim Wilson, CH2MHill; Brandi Howell, City of Guadalupe; Marti Schultz, City of Goleta; Jeff Salt, GSD; Jane Gray, Dudek

***On the Conference Call***

John Brady, CCWA; Rob Almy, GEI; Rose Hess, City of Buellton; Bob McDonald, CVWD; Bruce Wales, SYRWCD; Marti Wilder, County of Santa Barbara, LSD; Craig Murray, CSD

**Proceedings**

The meeting began at 1:40 with introductions. There was no comment for items not on the agenda. Kathy Caldwell began by giving an overview of the progress on the IRWM program to date beginning with the adoption of the plan in 2007, award of Prop 50 monies, working relationship with the SWRCB, the RAP and the project selection process for the Prop 84 Implementation Grant application. Ms. Caldwell then turned the discussion to the immediate items needing action including the Planning and Implementation Grant applications. By way of background, there are two rounds of planning grants, the first round contains \$20 million statewide, the maximum overall grant request for both rounds is capped at \$1 million and the deadline for applications for the 1<sup>st</sup> round is September 28, 2010. The Implementation Grant application for 1<sup>st</sup> round funds is due on January 7, 2011. Presently, there are 7 projects in the Santa Barbara region. In total, these 7 projects are requesting \$3 million from the total 1<sup>st</sup> round allocation to the funding area which is \$5.8 million. Further, Kathy discussed the “Operating Guidelines” for the process which were originally formulated when the project selection process began. The “Operating Guidelines” refer to the group’s communications, management of change and management of conflict.

In specific, the planning application and the update to the 2007 IRWMP was discussed in the context of needing to comply with DWR requirements, having the flexibility of adding other components of individual regional significance and following from the regional components, the opportunity to realize regional objectives. At the beginning of the project selection process, the Cooperating Partners and Stakeholder groups, in conjunction with consultant assistance defined regional objectives such as “increase water reuse and conservation”; therefore, within the confines of the planning grant, the question was posed to the group of their desire to include

focused planning studies or analyses which would further these regional objectives into the planning grant scope of work and ultimately into the IRWM plan (update). It was recommended to the group that in addition to the required IRWM plan components, additional funds be requested for development of: a) a salt and nutrient management plan, b) a recycled water plan analyzing opportunities and constraints; and c) a water emergency plan. Seven other optional components were discussed for more focused planning including: d) water conservation; e) coordination of drought management plans; f) groundwater management; g) septic systems; h) agricultural and urban stormwater management; i) protection and restoration of ecosystems and wildlife habitat; j) update of the County's Water Resources Report; and k) TMDLs. All of the potential items were discussed with some topics more than others with a few key issues rising to the top. The topics that were discussed in greater detail were:

- 1) Salt and Nutrient Management Plans (SNMP) focused in areas of the County where there was a need for them; the main communities benefitting would potentially be the City of Santa Maria and the City of Lompoc. Discussions about the ability and timing to proceed on a plan or plans implicated consideration of stakeholders, particularly the agricultural interests. It appeared that the City of Santa Maria would be ready to work on a scope of work for a SNMP, however, Lompoc would not; both Santa Maria and Lompoc agreed to get back to the consultants with a definitive answer in the days following the meeting.
- 2) Groundwater Management/Groundwater Banking in the context of a feasibility and constraints analysis focused on a regional program with local storage; the discussions would likely involve the cities of Santa Barbara and Santa Maria, in addition to CCWA;
- 3) Water Emergency Contingency Plan for regional water resources and systems as well as the potential consolidation/coordination of drought management plans;
- 4) an update of the County's Water Resources Report; and
- 5) a Recycled Water study assessing the overall water supply, focusing on agencies that are already on the way to using recycled water and analyzing the opportunities and constraints for expanded use of recycled water.

Meeting participants were asked to rank their preferences on a scale of 1 to 5, one having the highest priority and five the least; once the results were tabulated, they would be distributed to the group. Finally, the planning grant application schedule was discussed.

The next topic of conversation was the Implementation Grant application and the reiteration of the schedule. Once applications are submitted, draft funding recommendations can be anticipated in April of 2011 and final grant awards made in June 2011. It was emphasized that DWR is requiring a lot of information and detail and in order to meet the Jan. 7 deadline and have a competitive package, it is incumbent the project proponents to provide and punctual information to the consultants. To this end, a Project Information Form (PIF) was created and distributed to all project proponents. In addition, all project proponents were asked to provide the contact information for all people working on the project and relevant to contact. A SharePoint site has been set up so that everyone can upload and work on documents that will be required for the implementation grant application. Additionally, the economic analysis which is required as part of the application is quite exhaustive and accounts for a large percentage of possible points, hence project proponents need to provide good data and CH2MHill has a economist on staff that is highly competent and will prepare this portion of the application. It was also reiterated that projects that do not provide accurate data or unable to meet the requirements will be removed from the project list and not included in the application package. The implementation grant schedule was reviewed and the meeting adjourned at 3:36.

Prop 84 Workshop  
Wednesday, September 23, 2009  
City Council Chambers, City of Goleta, Goleta, CA

Morning Session: Attendees

Kathy Caldwell, CH2MHill; Dan Pitzler, CH2MHill; Michael Maxwell, CH2MHill, Teresa Reyburn, City of Santa Maria, Matt Van der Linden, Goleta Water District; Bruce Wales, Santa Ynez River Water Conservation District; Susan Segovia, City of Lompoc; John Brady, CCWA; Drew Dudley, CCWA; Tom Lockhart, Cachuma Resource Conservation District; David Chang, County of Santa Barbara, Agricultural Commissioner's Office; Marti Schultz, City of Goleta; Rose Hess, City of Buellton; Brian Kahl, Groundswell Technologies; Ron McClaine, Summerland Sanitary District; Pat Kistler, City of Carpinteria, Chamber of Commerce; Tully Clifford, City of Solvang; Tom Conti, City of Santa Barbara; Hillary Hauser, Heal the Ocean; Matt Nafataly, Santa Barbara County Water Agency; Nat Cox, California State Parks; Patrick Vowell, Golden State Water Company; Rachel Couch, California Coastal Conservancy; Lynn Rodriguez, Watersheds Coalition, Ventura County; Craig Murray, Carpinteria Sanitary District; Kathleen Werner, Goleta Sanitary District; Cameron Benson, City of Santa Barbara; Karin Quimby, 2<sup>nd</sup> District Supervisor's Office, Janet Wolf; Josh Simmons, Santa Ynez Band of Mission Indians; Lee Moldaver, Citizens Planning Association and Audubon; Kate Rees, COMB/CCRB; Jane Gray, Dudek

Proceedings

The meeting began at 10:40. Kathy Caldwell introduced the topics, herself and the CH2MHill Team, including Dan Pitzler and Michael Maxwell. Then everyone in the room went around and made introductions. Kathy Caldwell then generally discussed how the project selection process would occur, who would make decisions and how the voting would work. Ms. Caldwell also imparted to the group content of some of the discussions she had been having with Joe Yun at DWR, and indicated that DWR had been informed of what the Santa Barbara IRWM was doing. The discussion then turned to the topic of chartering and the purpose of a project team. She defined why the team existed and outlined what the expectations for the team are, i.e. foundational work, selecting a project priority list that reflects the region as a whole and recognizes the needs and conflicts of the region, assembling a project list that goes towards a plan, selecting projects that complement the state's priorities and enabling guidelines. Ms. Caldwell also touched on continuing the legacy of inter and intra-regional communication and cooperation. The discussion then turned to the "Operating Guidelines", and Ms. Caldwell talked about how the cooperating partners and steering committee members currently communicate and how the communication in this particular process would work, i.e. website communications, conference calls, public notices. She requested that project participants ensure that the information they present is accurate. She made reference to the process under Prop 50, and that there was not always accurate information.

Next, the discussion centered around the “Measures of Success” for the process, and it was agreed upon, that the measures of success would be:

- a commitment to participation;
- a better suite of integrated projects.

It was also agreed upon that regional needs and objectives would need to be assessed and that there may need to be an external force to help mold the projects.

Prop 84 Workshop  
Wednesday, September 23, 2009  
City Council Chambers, City of Goleta, Goleta, CA

Afternoon Session: Attendees

Kathy Caldwell, CH2MHill; Dan Pitzler, CH2MHill; Michael Maxwell, CH2MHill, Teresa Reyburn, City of Santa Maria, Matt Van der Linden, Goleta Water District; Bruce Wales, Santa Ynez River Water Conservation District; Susan Segovia, City of Lompoc; John Brady, CCWA; Drew Dudley, CCWA; Tom Lockhart, Cachuma Resource Conservation District; David Chang, County of Santa Barbara, Agricultural Commissioner's Office; Marti Schultz, City of Goleta; Rose Hess, City of Buellton; Brian Kahl, Groundswell Technologies; Ron McClaine, Summerland Sanitary District; Pat Kistler, City of Carpinteria, Chamber of Commerce; Tully Clifford, City of Solvang; Tom Conti, City of Santa Barbara; Hillary Hauser, Heal the Ocean; Matt Naftaly, Santa Barbara County Water Agency; Nat Cox, California State Parks; Patrick Vowell, Golden State Water Company; Rachel Couch, California Coastal Conservancy; Lynn Rodriguez, Watersheds Coalition, Ventura County; Craig Murray, Carpinteria Sanitary District; Kathleen Werner, Goleta Sanitary District; Josh Simmons, Santa Ynez Band of Mission Indians; George Amoon, City of Carpinteria, Vern Williams, Casmalia CSD; Tom Mosby, Montecito Water District; Kate Rees, COMB/CCRB; Jane Gray, Dudek

Proceedings

The meeting began at 12:30. Dan Pitzler led the afternoon session with a discussion on the project selection process.

Kate Rees made that comment that there were two levels of planning occurring, one is the project level and one is the Plan level. Kathy pointed out that within the Plan there needed to be an update to the list of priority projects. A brief segue to the difference between the short forms and long forms ensued. It was clarified that there would be an extensive list of projects in the plan and that the projects that are "shovel ready" would be those that fill out a long form; projects that are conceptual or not quite far enough along on the project maturation process would just fill out a short form. The projects that fill out the long forms are those which would compete for funding.

There were numerous comments and questions throughout this session. These are represented below:

- 1) Matt Van der Linden - Will there be more than 1 funding cycle under Prop 84?
- 2) Bruce Wales – Under Prop 50, we had to write a plan and then there was an implementation grant; in this process, how are we going to determine what is important?

- 3) Teresa Reyburn – What is our timeline in revising the IRWMP?
- 4) Hillary Hauser – What does “shovel ready” mean?
- 5) John Brady – Are we exploring conjunctive uses, storage of imported water when available?
- 6) Hillary Hauser – Is State water reliable or unreliable?
- 7) Teresa Reyburn – Do we know how much water goes for landscaping needs?
- 8) George Amoon – We need more projects aimed at dealing with flooding as a result of fires. Is there a priority for communities that are categorized as DR-18?
- 9) Marti Schulz – Is anyone looking at projects that increase the capacity in creeks, i.e. natural bottoms, groundwater recharge, widening channels?

**Draft Meeting Minutes**  
**PROPOSITION 84 PROJECT SELECTION PROCESS - WORKSHOP #2**  
**Wednesday, October 28, 2009**  
**9:00 a.m. – 12:00 p.m.**

**Location:** 140 West Highway 246, Buellton, CA 93

**Attendees**

Matt Naftaly, Santa Barbara County Water Agency; Teresa Reyburn, City of Santa Maria; Bruce Wales, Santa Ynez River Water Conservation District; Susan Segovia, City of Lompoc; Tom Conti, City of Santa Barbara; Drew Dudley, CCWA; John Brady, CCWA; Hillary Hauser, Heal the Ocean; Rose Hess, City of Buellton; Kate Rees, COMB/CCRB; Tully Clifford, City of Solvang; Stephanie Langsdorf, 3<sup>rd</sup> District Supervisor's Office; Karen Quimby, 2<sup>nd</sup> District Supervisor's Office; Susan Warnstrom, 4<sup>th</sup> District Supervisor's Office; Mark Kram, Groundswell Technologies; Marti Schultz, City of Goleta; Brian Moniz, Department of Water Resources; Terri Stricklin, Casmalia CSD; David Chang, County of Santa Barbara, Agricultural Commissioner's Office; M.W. Riley, Mission Hills Community Services District; Cynthia Allen, Vandenberg Village CSD; Patrick Vowell, Golden State Water Company; Jim McManus, Summerland Sanitary District; Julie Randall, Santa Ynez Band of Chumash Indians; Pat Kistler, City of Carpinteria, Chamber of Commerce; Kathleen Werner, Goleta Sanitary District, Kathy Caldwell, CH2MHill; Michael Maxwell, CH2MHill; Jane Gray, Dudek

**Proceedings**

The workshop began at 9:04 and was called to order by John Brady, CCWA. and Teresa Reyburn, City of Santa Maria, who gave the group an introduction to the objectives of the workshop and stated that the group was in a fortunate position to be able to work ahead of the game. Although DWR had not yet released the guidelines, the consultants had been talking with representatives of DWR and had taken a good look at the legislation so that the Prop 84 group would have a good idea of what DWR would be looking for, so that when the guidelines were released and action would be required, the Santa Barbara IRWM region would be able to respond quickly. Mr. Brady and Ms. Reyburn then asked everyone on the room to go around and introduce themselves, which they did.

Kathy Caldwell, CH2MHill, then addressed the group on the topic of project maturity. She stated that one of the points of this process was to "grow projects" from the bottom up and emphasized the need to put forward all projects and then bring these projects to a point of maturation so that they would be ready to compete as "shovel ready" projects for the application. She briefly touched on the short forms, the requirement for long forms for projects and then related the proposed scheduled for Guidelines, PSP etc. from DWR. Guidelines, although supposed to be released by DWR in November, would be likely to be released in December was her thought. Ms. Caldwell stated that the bond sale that had been scheduled to occur in October had happened and approximately 50% of the bonds had been sold.

Hillary Hauser, Heal the Ocean, discussed the thrust and focus of the process was to satisfy regional and sub-regional water objectives and satisfy the requirements of DWR. She discussed the need to collaborate and coordinate, to have projects that are multi-beneficial and focus on

“water, water, water”. She also underscored the need for projects to be measured and monitored so as to evaluate effectiveness.

Next, Ms. Reyburn and Mr. Brady addressed the group on the topics of participation and stakeholder support. They stated that stakeholder participation was key in a successful process and were thankful that there seemed to be wide support. They then turned to talk about the handout entitled “Regional Issues, Conflicts and Needs” which was derived from the first workshop discussion and this handout provoked much discussion among the group and some disagreement on whether or not the handout was an accurate representation of what the region really needed and whether or not the word “conflict” should even appear in the title. There was sentiment expressed that “conflict” should be stricken from the document because they way the hand-out read, everything phrased reflected the region’s “needs” and that conflict was not appropriate since there was no conflict. Sentiment was also expressed that perhaps the use of the word was confusing, but that there was value in leaving the word “conflict” where it was the list was just a starting point, it would change and in so far as there have been past conflicts , which have been resolved, there may be other conflicts that arise. Other members of the group (Ms. Shultz, Ms. Hauser), however, disagreed with this interpretation and related the use of the word conflict to the verbiage employed by the state. It was suggested that it was necessary to parrot the language that the state uses in identifying “conflicts” back to them. For a brief period, the discussion segued into a side conversation on the use of “issue” to which some members talked about the issues of the region and the necessity to view issues first from the perspective of the region as a whole and to recognize the intricate systems that make up the region. Once there is understanding of the whole region and the hydrological cycle, one could then differentiate between the different sub-regions; but there is an intimate connection, especially between the south and central coast because of shared infrastructure and may be conflicts. Mr. Moniz of DWR stated that the region should not shy away from conflict. It was suggested that an entire list on conflicts, separate from the handout be generated and then suggested that any further comments on the handout be directed via email to Kathy Caldwell.

Ms. Caldwell brought the meeting back to order to introduce the topics of project scoring, draft project criteria, performance measures and turn the discussion over to Michael Maxwell. Mr. Maxwell emphasized that the point of the project selection process was to ensure objectivity, but also stated that the group would be considering some other criteria. He turned to the criteria and sub-criteria and stated that each agency would be scoring their own project and that the consultants would be looking at the scoring to see if they had been properly weighted. A discussion ensued about the ranking system which uses a numerical weighting of one (1) to five (5), one being the lowest and five being the highest. There was some discomfort expressed about the number one even being used and it was explained that a one was essentially a zero, but because things needed to be multiplied across and because criteria demonstrated relationships, zero could not be functionally used; numbers should be viewed relatively, not absolutely. The group also discussed whether or not projects or criteria would be pre-screened, i.e. if a project is not ready to go, it should not even be considered, it should be eliminated, and how projects would just fall out of the process if they did not garner enough points. A point was also raised and the question directed to DWR staff, which was during the groups’ process, projects that are beneficial would score high based on current or anticipated guidelines from DWR, but would there be any high points for good planning? In other words, there may be good projects which support the overall tenants of the IRWM plan or good planning overall in the region, but such projects may not meet all the potential criteria that DWR is targeting in their guidelines. Has any consideration been given to that scenario by DWR? The DWR representative said that he felt DWR saw the need for long-term planning

but was unsure how it was specifically being addressed or going to be addressed in the guidelines. Another question that was brought up by the group was whether or not a high amount of matching funds would equate to a high score and it was confirmed that in that category, yes, a high amount of matching funds would yield a high score, for that category and perhaps overall. The group also discussed whether or not the likelihood of obtaining permits would or should be taken into consideration, and it was generally conceded that yes, the likelihood or speed of obtaining permits should also be a criterion.

In working through the criteria on the handout, the first category was Reduce Water Demand. Instead of using an absolute number (reduction in acre feet per year [AFY]) to measure this, it was suggested that there be a use of percentage, i.e. percent reduction in demand. Within this context, the issue of small communities and how they should be considered and addressed in the process was a topic of some discussion, especially in terms of how a project rates for costs, i.e. the cost of a project in a small community is usually disproportionately higher because the costs are shared among fewer people; thus putting a per dollar value per person is inaccurate. How is this going to be dealt with? Would there be considered of the overall population served? Another group member stated that small communities were at an advantage because they could be models for the larger community. The issue of DACs (Lompoc and Santa Maria; Gary and Sisquoc were also being considered based on income information even though they were not census rated) came up and the state's mandate that overall throughout the state, 10% of all monies would be allocated toward DACs, which does not translate to a 10% mandate per IRWM region. Further, in looking at water demand reduction, Ms. Caldwell stated that the State's overall mandate was to reduced water demand by 20% by 2020 and projects should also be viewed within this context as well. Again, the question of percentage reduced as opposed to number of AFY reduced was raised and that point made that using AFY or Percentage reduced was an issue that not only affected DACs or small communities but was a larger issue that affected many communities, for example in the context of water use, i.e. recycled water and how and where it would be used. The issue of conservation was brought to the fore and a small discussion regarding the types and numbers of factors in conservation, for example, what types of conservation measures were already in place? How many customers were being served? Back to the topic of numbers versus percentage, it was stated that there was value to having both and it was generally agreed upon that both AFY and Percentage would be taken into consideration.

Next, the group move onto the second category of Increase Water Supply. There was a brief discussion about whether or not to use a number as opposed to a percentage, and it was agreed upon that both would be used.

The category of Improve Water Supply was the next topic of discussion. Members of the group brought up the need to take into consideration the diversification of sources as a measure of reliability. Another point to take into consideration, apart from infrastructure, was the volumetric potential and where there is a larger supply there is more reliability. Further, increasing the capacity to store water should be a priority and discussion of the various ways that capacity to store should be considered under this heading. Another point was raised about water conservation and how the group would evaluate communities that already conserve. Ms. Caldwell said she would look into how that evaluation might take place. Finally, a group member asked whether or not SB 790 had a bearing on the Prop 84 process. Ms. Caldwell stated she would investigate this as well.

The category of Water Quality was addressed and a group member stated that a monitoring program was necessary and that if there was monitoring involved in a project, it should be ranked higher.

The next category, Improve Resource Stewardship, raised no questions. Thus, the category of Improve Flood Management was discussed and two aspects were cited, as being important: 1) the level of protection and 2) the number of people impacted. Further, this category should take a 100-year flood event into consideration (the years of benefit). Likewise, engineering standards should be used consistently in the weighting for this category i.e. 5-10 years, 10-25 year, 25-50 years and 50-100 years. It was also discussed whether or not the percentage of the population as opposed to the absolute number should be considered as in the previous discussions, and if so should the population numbers be weighted differently. A group member suggested that there should be a well-balanced approach to scoring, so that a group of projects that address the most critical issue areas by priority in the region are the result. Apart from the objectivity, there should also be a humanistic look at the scoring at the end. Another member of the group emphasized this point by stating that this is exactly why the group agreed to an appeal process.

The topic of Integration between Multiple Organizations was discussed and it was agreed that there should be discussion on how entities work together, their roles. A question was raised as to whether or not smaller communities working together would fit within this context. The next topic discussed was the consideration of greenhouse gases. There were various interpretations of what DWR meant and how they were looking at GHGs that were discussed, for example, was sea level rise and various issues associated with access to groundwater basins and intrusion meant in the context of how projects combat the effects of global warming, or was DWR more concerned with a project's ability to decrease CO<sub>2</sub> and save energy. How would projects be evaluated, would it be in reduction of CO<sub>2</sub> equivalents? The DWR representative stated that DWR was more focused on the reduction of CO<sub>2</sub>, and not necessarily focused on the effects of global warming. However, the suggestion was made that another criterion be introduced for projects that combat effects. A member of the group (Mr. Kram) commented on the importance of monitoring and that too many projects fall through the cracks because there is no monitoring. Further, a point was raised (by Ms. Hauser) that some projects which may be highly beneficial, such as tertiary treatment, would be disadvantaged because of their high energy usage unless they relied on some other alternative energy source, i.e. solar power.

There were no questions and little discussion related to the topic of Providing Benefit to Adjacent Regions other than potential test wells in the Cuyama Groundwater Basin by Ventura County. It was restated that the short forms would be accepted up until February and the long form would be due on November 12, 2009.

Kathy Caldwell brought the meeting back to center by focusing the group on the overall "suite" of projects and asking a few key questions such as were there any partnerships that could be formed?; where are the strengths and weaknesses? It was agreed on that there were few water conservation projects in the region, and that that was an area where more exploration was needed. The group discussed the mobile lab, which is a CRCD project and Lompoc's leak detection project with Vandenberg Village and Mission Hills CSD. The representative from Mission Hills (Mr. Riley) CSD said that they may have their own project and would get a short form together. The question was posed as to whether or not the leak detection principle or project could be a countywide project (Ms. Warnstrom). Group members raised the point that

metering was an easy solution to this and that often times re-metering or re-calibrating meters helps; also installing meters increases conservation (Mr. Vowell and Mr. Brady). Susan Segovia (Lompoc) also stated that there were likely more leaks because of the proximity of water lines to other utility lines in Lompoc. Ms. Segovia also stated that in the Tri-County area, Lompoc was the only public agency that had its own utility company. Another group member suggested that sewer lateral inspections should be added to the mix of projects and that should be accomplished by working with individual customers. Another group member (Ms. Hauser) seconded this idea stating that groundwater contamination from sewer leaks was a big problem. Yet another group member (Ms. Rees) suggested the installation of in-line valves, problems with metering and water accounting or rehabbing meters as another potential project or in concert with prior suggestions made. Finally, it was stated by a group member that Carpinteria Valley Water District had spoken about the possibility of a reclaimed water project and was wondering why it was not included on the list (Ms. Hauser). This person said they would follow-up with the District.

Under the category of Increasing Water Supply, a group member (Mr. Kram) discussed a project that was going on in LA where a drywell was being used as a storage unit for the capture of stormwater. Another project which was brought up by the County of Santa Barbara Water Agency (Mr. Naftaly) was a project focused on Quagga mussels.

On the topic of Partnerships, members of the group were reminded that interregional and intraregional partnerships counted. Ms. Reyburn discussed a project in Santa Maria that benefitted the community of Nipomo in SLO. The discussion of potential collaboration in the Rincon Creek Watershed, conservation or water efficiency projects with Santa Barbara County and WVCV as well as test wells in the Cuyama Groundwater Basin were also discussed. Ms. Rees discussed a number of projects that CCRB and COMB were working on in collaboration with the City of Santa Barbara and other projects which would potentially positively impact SLO and Ventura and provide for environmental stewardship and fish passage.

Under the category of Operational Efficiency, a group member (Mr. Kram) brought up the possibility of protecting basins from overdraft through a metering process, he also discussed a meter which could protect against saltwater intrusion, a meter which could guard against over-pumping in areas adjacent to streams/creeks which would regulate pumping by either slowing or stopping pumping when in neared or hit a particular threshold. These interventions would, he stated, not only help with efficiency, but also be able to serve as a tracking mechanism.

On the topic of Improve Resource Stewardship, the CCRB projects discussed by Ms. Rees (above) were cited. On the topic of Water Quality, Mr. Kram brought up the issue in nitrates in the Santa Maria Valley and the Santa Maria River and a sensor which could be used to detect nitrates. Ms. Hauser stated that such a sensor would be beneficial for numerous jurisdictions along the Santa Maria and Santa Ynez Rivers. Mr. Brady brought up the issue of salt management plans and that the treatment was no cost effective, thus few engaged in plans for treatment.

There were no comments on the topic to Improve Flood Management.

Ms. Hauser stated that she may have project on salinity. The group was reminded of the next meeting on November 12, 2009 at CCWA in Buellton and the Project Long Form deadline of the same date.

The meeting was adjourned.

**Draft Meeting Minutes**  
**PROPOSITION 84**  
**COOPERATING PARTNERS MEETING**  
**Wednesday, January 20, 2010**  
**2:30.m. – 3:30 p.m.**

**Location:** 2<sup>nd</sup> Floor Conference Room, Granada Garage, 1221 Anacapa Street, Santa Barbara, CA 93101; **Directions:** Exit off Anacapa Street (west side of Anacapa) through the glass doors labeled “Environmental Services” & take the elevator to the 2<sup>nd</sup> floor; exit to the right and into the conference room straight ahead  
255 Industrial Way  
Buellton, CA

**Conference Phone Number:** 1-866-203-7023  
**Passcode:** 2707428710#

***Attendees***

Kevin Winkler, Goleta Water District; Diane Gabriel, Montecito Sanitary District; Jim McManus, Summerland Sanitary District; Tom Mosby, Montecito Water District; Bob McDonald, Carpinteria Valley Water District; Cynthia Allen, Vandenberg Village Community Services District; Susan Segovia, City of Lompoc; Kate Rees, COMB/CCRB; Craig Murray, Carpinteria Sanitary District; Thomas Conti, City of Santa Barbara, David Chang, Agricultural Commissioner’s Office, County of Santa Barbara; Hillary Hauser, Heal the Ocean; Matt Naftaly, County of Santa Barbara, Water Agency; Jane Gray, Dudek

***On the Conference Call***

John Brady, Central Coast Water Authority; Kathleen Werner, Goleta Sanitary District; Kathy Caldwell, CH2MHill; Teresa Reyburn, City of Santa Maria; Steve Kahn, City of Santa Maria; Rose Hess, City of Buellton

**Proceedings**

The meeting began at 2:35 and was called to order by Matt Naftaly. Matt turned the meeting over to Kathy Caldwell and she summarized the topic and contents discussed during the Roundtable of Regions discussions, specifically staffing changes at DWR and the schedule for the Draft Guidelines for Implementation and Planning Grants. In reference to staffing changes, Maria Pang, who was the contact person and the Regional Coordinator for the Central Coast, took a position at the Department of Public Health; Ralph Svetich who was in DWR’s Division of Planning & Local Assistance/Division of Flood Management retired at the end of 2009; Norman Shopay who worked in DWR’s Conjunctive Water Management Branch was replaced by Trevor Joseph took a job elsewhere at DWR; and Harley Davis in the Conjunctive Water Use Branch, took another position at DWR. It is anticipated that the guidelines would be released in mid-February. There would be a 30-day comment period on the draft guidelines, within which there would be 2 public meetings, one in Sacramento that will be webcast, and another meeting in Southern California. After comments are responded to and final guidelines are released, in April (likely), applications for Planning Grant would most likely need to be received by early June and

Implementation Grant applications would likely need to be received by mid-January. The amount available to the Central Coast Region for implementation grants is \$5.8 million.

The next topic brought up by Matt Naftaly for a vote by the Cooperating Partner's was a recommendation by the steering committee that Rob Almy be hired as the Prop 84 project manager. Some partners (Craig Murray, Kathleen Werner) expressed concern about Rob's ability to lead the effort based on his remote location, capability to be available at short notice, etc., ability to participate from his location if need be because of the time difference and asked if anyone else had been considered. Susan Segovia stated that Rob had been considered and recommended by the steering committee because of his knowledge of the proposition process, dedication to IRWMP and interest in water resources. Kate Rees bolstered these points and also stated that because Rob was familiar with the County process, he would integrate well, be able to write Board Agenda Items, etc without direction. Kathleen Werner asked whether there had not been enough time to do an RFP and suggested that it was a good time to bring someone local on board, and that if someone needed to be trained, that person could be trained under Rob and then be able to assume the project management position. Hillary Hauser responded to the issue of time by reminding everyone that Tom Fayram was interested in pulling out of Round I funding, and so a Project Manager was needed rather quickly to take some responsibilities off of Matt and by extension, the Water Agency. A comment was made that there were too many consultants involved and that if anything ever came up, it was generally suggested that a consultant be brought on board. Teresa Reyburn responded to this comment by stating that the consultants were needed and that no one was doing any double work. CH2MHill's work was different than what Kennedy Jenks was doing for Prop 50 and also the work that Rob would need to do.

Kate Rees suggested that the group should apply for Round I Planning money to update the IRWMP and also start recruiting for a full-time grant application coordinator, but that in the meantime, Rob should be contracted with to take on Prop 84. Kate also posed the question of whether or not SLO was the only region who did not receive funding under Prop 50, and the general consensus was that in the Central Coast Region, SLO was the only region that did not get funding. Steve Kahn also stated that there was no reason for Santa Barbara County to step aside for SLO even though they did not get money in Prop 50 since they have not approached us or asked us to step aside. Since SLO was not asking for help, we should not be taking ourselves out of the competition. Craig Murray questioned the advisability of spending money on an implementation application when there was so little funding at stake.

As the meeting was drawing to a close, Matt asked everyone to decide on some of the issues so that the group could move forward and the following motions were made:

- 1) Kate Rees made a motion to hire Rob Almy, either through GEI or through the Water Agency as the project manager.  
The vote passed unanimously.
- 2) Susan Segovia made a motion to move forward with an application for a Planning Grant to update the IRWMP.  
The vote passed unanimously.
- 3) Teresa Reyburn made a motion to apply for Round I Implementation funding; the motion failed; 6 votes against and 4 votes in favor of applying.

Teresa asked the group to continue the discussion of implementation funding to the next meeting, but to move forward with the first two motions. The group agreed and a date of Feb. 11, 2010 from 10:00 a.m. – 12:00 p.m. at CCWA.  
The meeting adjourned at 3:41.

**Draft Workshop Minutes**  
**PROPOSITION 84 Project Selection Workshop #3**  
**Tuesday, May 4, 2010**  
**9:00 a.m. – 1:00 p.m.**

**Location:** CCWA, 255 Industrial Way, Buellton, CA 93427  
**Conference Phone Number:** 1-866-203-7023  
**Passcode:** 2707428710#

***Attendees***

John Brady, CCWA; Drew Dudley, CCWA; Teresa Reyburn, City of Santa Maria; Steve Kahn, City of Santa Maria; Susan Segovia, City of Lompoc; Matt Van der Linden, Goleta Water District; Marti Schultz, City of Goleta; Hillary Hauser, Heal the Ocean; Erin Maker, City of Carpinteria; Tom Fayram, Santa Barbara County Public Works; Matt Naftaly, Santa Barbara County Water Agency; Cindy Allen, Vandenberg Village CSD; Dennis Delzeit, City of Guadalupe; Kent Yankee, City of Buellton; Barbara O'Grady, W.E. (Women's Environmental) Watch; Rob Almy, GEI; Kathy Caldwell, CH2MHill; Michael Maxwell, CH2MHill; Jane Gray, Dudek

***On the Conference Line***

Kathleen Werner, Goleta Sanitary District; Juan Beltranena, Santa Barbara County Parks Department; Craig Murray, Carpinteria Sanitary District; Pat Kistler, City of Carpinteria, Chamber of Commerce; Dan Pitzler, CH2MHill

**Proceedings**

The meeting began at 9: 08 and was brought to order by Matt Naftaly. After going around the room for introductions, Matt discussed the MOU worksheet that was handed out. He explained that in general, everyone's cost share had been reduced from previous drafts since the City of Guadalupe and Laguna Sanitation had rejoined in the Cooperating Partners. Jane Gray then gave a brief over view of DWR's sequencing schedule of PSPs for planning, implementation and Prop IE grant applications. She also indicated that the proposed application preparation times were 6 weeks and 8-10 weeks, respectively for planning and implementation grants. The Prop IE PSP would follow immediately on the heels of the implementation application with a preparation period of 6-8 weeks.

Kathy Caldwell introduced the main topic for the workshop which was the recommendation from the steering committee on the final project list. She indicated that this was the last workshop in the series and that it was probably the last meeting on projects before preparation of the implementation application. Kathy gave an overview of what Steering Committee was thinking about when making the decisions on projects. She reminded the CP of some of the State's objectives such as: drought preparedness, water use and re-use and climate change. Further, she stated that Rob had had several phone calls with the other regions in the funding area. She stated that based on the \$5.8 that was guaranteed in the 1<sup>st</sup> Round for our funding area and the potential for other regions to put forward 1<sup>st</sup> Round applications, a \$3 million cap was a good target for an application. As such, that was the number that the Steering Committee used. Dan Pitzler gave a brief discussion on the project grouping that was reflected in the handouts and clarified that the match amounts were taken from the long forms.

Ms. Caldwell stated that in consideration of the \$3million target, the methodology used by the steering committee included: 1) looking at the top ranking projects across the category project types; and 2) using the lowest grant amount requests for each project. Immediately, some projects were eliminated. She explained that the Casmalia project was eliminated because it

was incomplete, however, it was suggested to Casmalia that they seek funding under the Local Groundwater Assistance grant program. The CCWA reacquisition project was removed because the grant request amount of \$5 million was too large, and also because there were still some outstanding questions on the project's eligibility. Rob Almy stated that even though the CCWA project was eliminated, it was also important to get a clear answer from DWR as to the eligibility. John Brady agreed with this and indicated that they had made the own independent inquiries to DWR on this issue, so they expected an unequivocal answer from DWR. Kathy Caldwell then resumed the conversation on project selection by saying that the City of Santa Maria had two projects which were ranked highly, but in the spirit of cooperation withdrew the Leak Watch project in favor of the Water Efficiency project which has inter-regional benefits. The City of Guadalupe's project was also included because it benefits a DAC, has a very high value to cost ratio and because it focused on water reuse, which is a State priority. Continuing down the list, the SC asked GWD to trim \$50,000 off of their project, which they did and the SC also took \$61,000 off of the Ag. Commissioner's project; the City of Goleta's project had been selected because it ranked well and had a greater SWFC benefit than the City of Carpinteria's project. The City of Goleta had also been asked to reduce their request amount and did agree to reduce their request amount by \$2 million or from \$3 million to \$1 million. The SC also reduced the CCWA pipeline project by \$100,000 to a \$200,000 grant amount.

At this point, Matt Naftaly updated the group on developments since the SC meeting,, namely: 1) the Ag. Commissioner's office had withdrawn their project because of an inability to participate in the overall effort and potential lack of ability to share in the costs for an implementation grant application; while not necessarily a key point in the decision, they also had no match for the project; and 2) Goleta Water District withdrew their project because the district had some financial constraints. Matt also stated that because the City of Goleta had reduced their grant request from \$3 million to \$1 million creating a \$2 million gap, there were some questions about where the additional funding would come from, and if they did indeed have all the funding they needed to deliver the project. He elaborated by sharing that the project involves County Flood Control, and that the BOS had authorized up to and not over \$4 million for the project.

Rob Almy interjected by pointing out that while the nuances of previous discussion were particular to the City of Goleta, that all projects were being held to the same standard. All projects would need to hold up in an application to the State level and under State scrutiny. He also emphasized that the projects would need to bear costs of the preparation of an application for grant funding, so all projects that had been included on the list need to make firm commitments. Hillary Hauser asked about the projects that had dropped out like the City of Santa Barbara's projects and it was explained that one was not eligible because it was going to use SRF money as match, and that was not acceptable. The other project was a study and was not eligible on those grounds. Overall, all the projects that dropped out were on the out list because of the scrutiny they had been given. Rob was quick to add that all the projects were good projects, and that it was his interest in seeing as much money as possible come to the region; as such if a project had been eliminated and there was other appropriate funding available, projects were directed to those other funding sources. Hillary then asked specifically about the projects on the "pink list" at the bottom of one of the handouts and whether or not those had been scrutinized as well. The answer was yes, that those projects had been scrutinized. Further, there was the ability to add some projects from the "pink list" to the list for implementation if that was what pleased the CP.

Before moving forward with that discussion, however, Tom Fayram wanted an update from Marti Schultz on the funding for the City of Goleta's project. Ms. Schultz explained that the City was committed to the project and that they were pursuing other funding, i.e. from the RDA as well as the other grants. Tom Fayram reiterated the County BOS's commitment of \$4 million, but also stated that they would not be able to commit to any other funding beyond that, thus if

there was a \$2 million shortfall, the County would not be in any position to cover that. Marti's response was that the City understood the County's position and was not asking for more funding from them. She also stated that the City had never asserted that the project was fully funded, and asked when they needed to give the group assurance that the project is fully funded. Rob Almy indicated that the consultant team preparing the application needed to be able to best characterize a secure funding scenario to the State, and to that end, needed critical project information such as: 1) is there sufficient funding for the project?; 2) do the decision makers in Goleta have the ability to move funds around to fill the gaps? Again, the reason the topic is being broached is because the application and all parts of the application need to have certainty. Matt Naftaly stated that the group could also consider options for a funding scenario, such as with the City of Goleta and without the City of Goleta. Kathy Caldwell indicated that the certainty of the project's funding should have been assured by [today] May 4. Tom Fayram posed a question to the group about increasing the grant request for the project under Prop 84 so that funding would be secure. He wondered what that would do to the other projects. Rob indicated that the project mix would be heavily weighted towards the Goleta project with over 1/3 of the overall request resting with one project.

Matt Van der Linden suggested that the \$250,000 for the withdrawn GWD project be reallocated to the existing projects on the project list. He suggested that since there was so little funding available, it was not cost effective to add more projects since the grant request amounts were so small and there would still be application costs. He also suggested that the group put a project on a contingency list in case another project dropped out or more funding became available. Kathy Caldwell indicated that there would be a discussion on contingency projects in the latter half of the meeting. Hillary Hauser asked if City of Goleta project could go to Round 2 since the point of the meeting was to get a workable list and Susan Segovia asked if the project could be phased so that perhaps the RDA could fund a portion right now and then wait for 2<sup>nd</sup> Round funding. Marti indicated that she did not know if that was possible and Tom Fayram and Rob Almy seemed to think that it was not feasible if it only bought the City 6-10 months or so. Mike Maxwell pointed out that Prop 1E funding was also available.

In response to the GWD's project being removed, leaving \$250,000, the group began discussing the other projects that could be included into the application. Teresa Reyburn stated that the Leak Watch project was approved by the City Council and included in their 2-year budget. She also said that there was no outstanding environmental work that needed to be done, Phase I of the project had been completed and an antennae had already been installed leading to 1 AF of water already having been saved.

Rob asked where the Vandenberg Village project was. Cindy Allen said that the District did have the money in reserve for the project, but they also had a delay and would be back on track in mid-May. She indicated that the pilot project would be starting at the end of May and the feasibility study would be available at the end of June, which was just too late for this 1<sup>st</sup> round of Prop 84 funding, the way the timeline has been put forward.

Rob Almy asked about the CCWA pipeline project. Before responding, John Brady pointed out that he understood the wisdom behind removing the reacquisition project from the mix and then went on to clarify that on the long form, CCWA was asking for \$4.9 million for the pipeline with the ability to go as low as \$600,000. They then further reduced the amount to \$420,000 and finally to \$300,000. He stated that when he learned that the SC had reduced the project to \$200,000, he was not sure that was feasible, so was at least requesting \$300,000. Further, he informed the group that CCWA had budget for engineering and analysis, the survey, geotechnical work and permitting, they would be doing detailed design and construction budgets thereafter, but did not have the budgets yet in hand. He assured the group that the Board would be approving the 2<sup>nd</sup> year budget, the need to move forward with the project was clear and that they were proceeding with permitting. Matt Naftaly asked if this was an O&M project,

to which John replied, no, it was a capital project. He explained that the pipeline had been constructed in the early 1960's and was acquired in the mid-1990's from SYRWCD ID#1. He imparted that the pipeline had been previously repaired, but that this was a new project by virtue of the fact that they were completely redesigning and engineering the pipeline, and that CEQA was being done. Kathy Caldwell inquired about the design life of the pipeline. It was imparted that it was probably 20-30 years, but no one knew for certain. He also stated that he thought the overall pipeline was no where near its design end, and an overall pipeline replacement project would cost somewhere in the neighborhood of \$250 million, so that executing this project now was necessary to forestall some larger problems. To that, Kathy expressed she was satisfied and thought the project was eligible.

Rob Almy asked if there were any other questions that needed to be asked regarding projects, such as the Goleta Sanitary District or the City of Lompoc's project. Susan Segovia from the City of Lompoc volunteered that all the cooperating agencies/districts were committed, that the grant request was for the capital costs and that the feasibility study was paid for separately from the enterprise fund. Rob asked if all the money had been budgeted to which Susan answered yes. Matt Van der Linden inquired if the City of Guadalupe would be able to come up with a match and Dennis Delzeit expressed that they would be able to find some match. Steve Kahn asked Dennis to give an overview of the project. Dennis told the group that the study was to determine if there was any potential use for recycled water in the community. He explained that the current WWTP went to a secondary treatment level, it was located adjacent to agricultural fields, hence there were potential ag. customers, city parks and others, but the City really needed to know if it was financially feasible to recycle water and a cost estimate would result from the study. Rob Almy went on to mention the ability that DACs such as Guadalupe had in proposing studies as projects. He also reminded everyone that DACs are not required to have a match and that their inclusion in the process demonstrates that the CPs are inclusive and equitable.

Erin Maker from the City of Carpinteria spoke next identifying that the Via Rea project was a capital project, on the CIP list and was also being funded with Measure A. They would possibly be downsizing the project by working in concert with CalTrans since they also had a project going on at that location. She talked about the benefit of the project to water quality, Erin also mentioned that there was a slight potential of an archaeological site being present but that issue was likely minor since a study had already been conducted and Public Works was just waiting for a determination from Community Development. Steve Kahn asked if there were any pending ROW issues or environmental issues, to which Erin replied no and further explicated that a Cat Ex had been processed.

As all the projects had been discussed, Rob Almy raised the following: 1) did the CP want to consider the SC's recommendation to give all the present projects on the list more funding?; or 2) in consideration of the projects that did drop out, did the cooperating partners want to revisit the projects which were dropped and bring any back? John Brady responded by requesting the \$300,000 amount for CCWA. Kathy Caldwell expressed she thought there was an error in the meeting minutes that quoted the SC recommending \$250,000 for the project, instead of the \$200,000 shown in the table. John Brady reiterated that CCWA had already lowered its request from \$4.9 million to \$600,000, then to \$420,000 and finally to \$300,000. Steve Kahn asked what the overall dollar amount to reallocate was, was it \$550,000?; if so, if they gave \$100,000 to CCWA that would leave \$450,000. Hillary Hauser asked if it was too early to propose. Kathy Caldwell reminded the group of the State's priorities and asked them to look back at that list; since drought preparedness was at the top of the State's list, the group should be looking at those kinds of projects. Rob Almy verbalized that there were two projects that met that requirement and Marti Schultz suggested that since Santa Maria's Leak Watch project fit that category that should be added back into the list. Steve Kahn stated that they would be happy with a reduced amount, and suggested \$170,000. Erin and Marti wanted

assurance that including the Santa Maria project was a good decision in making the group's application more competitive. Kathy responded by saying that the more projects the group had that met the State's highest priorities, such as drought preparedness and water re-use, the better the application would compete. Marti Schultz suggested the Vandenberg Village project, but Rob countered that the present schedule was problematic. Marti then argued for a better balance on the types of projects. Rob inquired about the run-off associated with the City of Carpinteria's project. Erin clarified that presently water ran-off from a residential development to a large ag field, then across Via Real and finally into the very overwhelmed stormdrain which emptied into Carpinteria Creek, which was a naturally preserved channel and also a channel that supported steelhead trout and tidewater goby. Rob ventured that that project would greatly reduce erosion. Hillary Hauser liked the idea of including Carpinteria. Mike Maxwell asked if CCWA's project was being considered at \$300,000, to which Rob replied that he was not sure they were going to make that decision just yet. Teresa Reyburn posed a generic question which was at this same point in the Prop 50 process, the ability to compete well was discussed and so she wanted to ask Rob and Kathy if the projects on the current list were competitive and if the list was lacking anything? Rob stated that he thought the projects represented the State's priorities well with the exception of a comprehensive groundwater project. Tom Fayram asked if there was a very small project that could be added, in the amount of ~\$10,000 for the Cuyama groundwater basin. Rob indicated that yes, groundwater projects are necessary, but right now these types of issues were more suited to the update to the IRWMP and because there would be more of a discussion of these things in the plan, there would be a better platform for future funding. Hillary Hauser asked if any of the projects on the long list could be brought back, however, it was again explained that most of those project had eligibility issues or were not ready.

Kathleen Werner said she knew that Bruce Wales was not there, but in bringing up a familiar conversation that Bruce likes to have, she expressed that the group should be looking at the actual issues within the Santa Barbara region. She verbalized that if there weren't any groundwater projects, then maybe it was not a need in our region and so even though we wanted to hit all the bullet points for the State, if it is not important or necessary in our region right now, maybe we should not be having a conversation about it. Rob Almy agreed with this sentiment. Matt Van der Linden also concurred and stated that he thought that the group did have a good breadth of projects that met State priorities. Kathy Caldwell went on to say that although the region did not have a host of projects that 1) reach across regional boundaries; 2) resolved serious conflicts within the region; and 3) address critical water supply in DACs; there were still opportunities to develop these projects for the next rounds. In accord, Rob asserted that the update to the IRWMP would touch on all those issues and in particular with regard to groundwater, there were on-going projects in the Cuyama groundwater basin.

Thus, back to the question of reallocation of funding, Steve Kahn moved to include the City of Carpinteria's Via Real project back into the application and also moved increase funding to CCWA for \$300,000. The motion passed, hence CCWA received \$300,000 for their project and the City of Carpinteria received \$150,000 for theirs. Rob asked what the group wanted to do with the remaining money. Did the group want to redistribute to the listed projects or did they want to add the City of Santa Maria's Leak Watch back into the list. Erin asked for clarification on what was a more competitive application, more projects or more funding? Matt Naftaly pointed out that the more projects were involved, the more expensive the application was likely to be. Rob Almy reminded everyone that each applicant would bear a portion of the costs for the implementation application and that in the Prop 50 process, the application consisted of three 6" binders; he also underscored the importance of the variety and range of projects over the number. Steve Kahn highlighted that no one project fulfilled all the priorities. Teresa Reyburn asked for a further clarification from CH2MHill as to whether or not they had done a project appropriateness audit on all the projects similar to what had been done in Prop 50. Kathy Caldwell answered yes.

Marti brought up the topic of other potential projects that may drop out and wondered what to do in that scenario. She went on to suggest that if that happened, the City of Santa Maria's project should be brought in at \$400,000 and then if there was anymore money available, that the projects under \$1 million should get a proportionate share equally distributed, then if there was still remaining funding, those projects over \$1 million should get equitably distributed funding. Before any action was made, Rob encouraged the group to look at the original project ranking list and to the highest ranking projects, such as the City of Santa Maria's leak watch project and the also consider the smaller projects like the City of Lompoc, the City of Carpinteria and the City of Santa Maria's Water Efficiency project; and then finally, if there was still funding, that the larger project might receive funding. Hillary Hauser asked whether the Santa Maria Leak Watch project was going in at \$170,000 and if it so, could it be added. Matt Vander Linden said that although he did not like metering projects, that he would be fine having the project in and re-distributing the rest of the money. Steve Kahn declared that he would be fine taking \$100,000 off their water efficiency project and adding it to the leak watch project for a total of \$270,000 for the leak watch project. Matt Van der Linden felt that the City of Goleta needed funding and expressed that the group should be doing what they could to help them out. Teresa Reyburn disclosed that the water efficiency project already had a 60% match, but because of an installation of a \$50,000 pipeline for the project, the match would increase. Rob posed the question again to the group and asked if they wanted to go with Matt Van der Linden's suggestion or if they wanted an alternate proposal. Matt Van der Linden repeated that he though the City of Goleta should get the remaining money after other the projects that were previously included were funded. Kathleen Werner opined that she liked the original proposal of spreading the remaining money to the smaller projects and then adding any remaining money to the City of Goleta's San Jose Creek project, however, if the City of Goleta was in such dire straits, the she would not object to San Jose Creek project receiving more money. Rob drew the groups attention to the economic balance of the proposal; if the City of Goleta, which was already seeking the largest amount of fund, by increasing their request, over 1/3 of the money requested in the application would potentially be going to San Jose Creek, but also stated that it did have a benefit to an endangered species. Teresa Reyburn asked how ready the project was, and Marti explained that the project was in design.

Steve Kahn proposed that since the guidelines were not final and because Rob Almy was going to have an inter-regional call on the 11<sup>th</sup>, that the group should reconvene at that time so if there was a change in the amount of funding, the Cooperating Partners could take action. Hillary Hauser wanted to know what the next steps were. Rob Almy outlined the process: 1) CH2MHill would prepare a scope of work and cost estimate for the implementation application; 2) once our regional project list is final, the discussion with the other regions in our funding area would be more informed; the goal is to have the other central coast interests agree to the funding scenario proposed by the Santa Barbara region. Thus, Hillary summarized, the CP would have another chance to refine the list after the meeting on the 11<sup>th</sup>. Kathy pointed out that CH2MHill would not be able to scope out an application cost without a completed project list. Rob did return to Steve Kahn's comment, however, by saying that we as a region did need to be nimble and that he would keep the group in the loop on the potential changes pursuant to the central coast call on the 11<sup>th</sup>. At this time, however, it did not appear that SLO county would be applying since their list of projects was old and they had not updated it or included a mechanism whereby they could update the list.

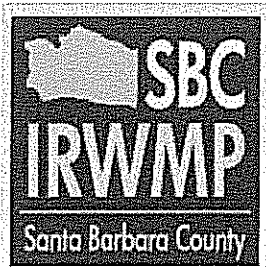
Matt Van der Linden made a motion to allocate the remaining \$181,000 to the City of Goleta's project. John Brady of CCWA seconded the motion and it carried, thus, the list of projects that resulted from the Cooperating Partners meeting was:

- 1) City of Santa Maria – Secondary Water Efficiency System project
- 2) City of Santa Maria – Radio Water Conservation Metering project – Leak Watch

- 3) Goleta Sanitary District - Wastewater Treatment Plan Upgrade
- 4) City of Goleta - San Jose Creek Capacity Improvement project
- 5) City of Lompoc - Lompoc Valley Regional Leak Detection program
- 6) CCWA - Pipeline Erosion Damage Repair project
- 7) City of Carpinteria - Via Real Stormwater Management project
- 8) City of Guadalupe – Recycled Water Feasibility Study

Rob Almy asked the group if and how they wanted to deal with an increase in funding it that happened. Steve Kahn suggested that no decision be made; the group should wait for Rob to have a conversation with the other regions. With that, the next steps were for CH2MHill to come up with a SOW for the application. Kathy informed the CP that in Prop 50, the application had cost \$310,000 and in comparison, this application was greater in complexity, especially in consideration of analysis associated with the cost/benefit analysis. Matt Naftaly indicated that a methodology for cost sharing needed to be agreed upon; they may pro-rate the cost based on grant amount request as was the case in Prop 50, but there were other ways of accomplishing that. Rob Almy indicated that the group would be deferring the question of additional funding and proposed the following: he moved that if there was < \$500,000 to decide upon, that the decision would be given to the SC, however if there was > \$500,000, the decision would be brought to the CP. Both Marti and Susan seconded the motion and it passed. Matt Naftaly asked for a clarification on the timeline and Kathy Caldwell said that CH2MHill would have SOWs for both the planning and implementation grant application for consideration in 2 weeks.

The meeting adjourned at 11:28 a.m.



## Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review

November 2010

### Background

In November of 2004, the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) released the *Integrated Regional Water Management Grant Program Guidelines* which set forth the requirement of an adopted Integrated Regional Water Management (IRWM) Plan as a pre-requisite to applying for and obtaining IRWM grant monies. In response to the need for development of such a plan, the Santa Barbara County Water Agency, along with 29 other jurisdictions, districts, JPAs, private water companies and others organized to form the "Cooperating Partners" group. The first Memorandum of Understanding (MOU) was developed and executed in 2005 with the expressed intent of IRWM plan development and application for Proposition 50 monies. The MOU provided for judicious Cooperating Partners cost sharing to write the IRWM Plan and established a governance structure for overall IRWM in Santa Barbara County.

The governance structure has evolved over time, partly in response to new legislation and DWR Guidelines, to wit, Prop 84, and partly because the Cooperating Partners identified areas for improvement. As such, two subsequent MOUs (2009, 2010) have been developed and executed. Both of the subsequent MOUs have built upon the original MOU; typical language includes the purpose of the agreement and provisions for financing, indemnification, settlement of disputes, and length and termination of the agreement. They require only the signatures of the authorized representatives of the organizations. The MOUs serve to further and strengthen the IRWM process and goals for collaborative and integrated regional water management development. The March 2010 MOU added language enabling expanded membership, establishing a more inclusive governance structure and defining roles and decision-making processes. Generally, the MOU provides a basis and commitment to coherent and enduring IRWM efforts throughout the region.

### Santa Barbara County 2007 IRWM Plan

The County's first IRWM Plan was adopted in 2007 and enabled the County to apply for funds under Proposition 50. The County successfully obtained \$25 million in grant monies for 14 projects throughout the region. The State Grant Agreement was signed

in December, 2008 and at the date of print, three of the 14 original project funded under Prop 50 have been successfully completed.

The 2007 IRWM Plan conformed to the Guidelines in effect at the time and will need to be updated in compliance with the new IRWM Plan Guidelines released by DWR in August, 2010. Pursuant to an update, Santa Barbara County applied for planning grant funds under Prop 84 and anticipates updating the IRWM Plan to current plan standards by 2012.

Prior to an update to the IRWM Plan, however, Santa Barbara County is seeking implementation grant monies to fund actual projects through Proposition 84. The Proposition 84 Guidelines for Implementation grant funds stipulate that in order for projects to be eligible for consideration and potential funding, projects must be either included within the existing IRWM Plan or have been added to the project list for the IRWM Plan according to the procedures outlined in the Plan. In the case of Santa Barbara County, the 7 projects included in the Implementation Grant Application were added through the Biennial Review process outlined in the 2007 IRWM Plan.

#### Biennial Review – IRWM Plan Adaptive Management

As part of an overall adaptive management strategy for the evaluation of projects and plan performance, the 2007 IRWM Plan states that the Cooperating Partners will conduct a biennial review of the IRWM Plan and evaluate Santa Barbara IRWM Plan's objectives, priorities, water management strategies, and project lists. The IRWM Plan also commits the Cooperating Partners to modifying the aforementioned Plan elements as appropriate. Specifically, the 2007 IRWM Plan describes the implementation of the adaptive management framework as follows:

*The IRWMP's overall adaptive management framework will be implemented in the following manner in accordance with the established governance practices described in Section 1:*

*1. IRWMP managers will conduct a biennial review and produce a 5-year report summarizing progress made in achieving IRWMP goals, including the tracking of funded projects, modifications to projects, and development of new projects as a result of the plan. The results of the biennial review and the 5-year report will be posted on the IRWMP Web site (<http://www.countyofsb.org/pwd/water/irwmp.htm>). The performance of implemented projects will be compared to original project objectives to ensure objectives were met.*

*2. IRWMP objectives, priorities, and water management strategies will be evaluated during the biennial review and modified appropriately. The need to develop different projects to better meet the plan objectives and regional issues will be considered, as will the need to modify existing projects. Projects that may be deleted (for example, because their purpose has been met through another project or because conditions have changed) also will be considered at this time.*

*3. Minor adjustments to planning assumptions, operations, or actions will be adopted as necessary. If significant changes to the approved IRWMP are found to be required in the biennial review or the 5-year IRWMP report, the plan will be revised and submitted for approval by Cooperating Partners as necessary.*

#### **Biennial Review – Implementation**

In conformance with the above, the Cooperating Partners undertook the biennial review process between 2009 and 2010 through an extensive and exhaustive public process commencing in September 2009. Over the course of 8 months, the Cooperating Partners and the Steering Committee met no less than once per month to:

- Identify, define and scope the Region's issues, conflicts and objectives in the categories of water demand, operational efficiency and transfers, water supply, flood management, water quality and resource stewardship.
- Solicit and develop projects that align with the Region's goals and objectives as identified and updated.
- Solicit and develop projects that align with DWR's Program Preferences.
- Outline the objective and scientific processes employed in the selection of projects for inclusion into the Implementation Grant application.
- Determine criteria and sub-criteria for project selection process.
- Score, rank and select projects for inclusion in the Implementation grant application.
- Review the draft and final list of selected projects.

As a result of the biennial review, the Region identified the following objectives:

- Increase water use efficiency including water reuse and water conservation measures to increase and extend existing water supplies.
- Improve operational efficiency, transfers, and supply reliability
- Increase water supply in the least costly, most efficient, and most reliable manner
- Improve management of groundwater basins through conjunctive use
- Improve flood management to protect people, property, and ecosystems
- Improve water quality
- Improve quality of groundwater, stormwater runoff, agricultural water runoff, and treated water discharges to regional water bodies
- Improve water management to protect and restore ecosystems and wildlife habitat

Further, the biennial review process included 78 new projects in the IRWM Plan, seven of which were selected for inclusion in the implementation grant application projects based on their ranking with the established selection criteria and alignment with the Region 's objectives and DWR's Prop 84 program preferences.

The selected projects for the Implementation Grant application include:

1. City of Santa Maria's Untreated Water Landscape Irrigation Project – Extends an existing groundwater landscape irrigation system from the City's Civic Center area to facilities with landscaped area, including Allen Hancock College, Miller Elementary school, Santa Maria High school, Santa Maria Fairpark & Adam Basin. The project allows for water use efficiency while enhancing water management efforts through delivery systems that utilize an abundant groundwater resource from the Santa Maria groundwater basin. The irrigation system consists of several old production water wells that were removed from domestic supply due to high nitrate concentrations. The wells will be rehabilitated & put into service to water turf & other landscapes through a piping system that is isolated

from the domestic supply piping. The efficient match of water resources to water use augments drought preparedness efforts within the region. Further, water reliability is strengthened by decreasing the burden on State Water Project water.

2. City of Santa Maria's LeakWatch – Allows the City to complete the installation of a water meter system which reads water use data in real time. With the LeakWatch system, real-time data is broken down to show usage by hour, which could indicate a water leak or over use if there is 24-hour activity. The system includes base stations, converted water meter registers, transmitters & associated software. Data provided by the fixed-base system is used to detect leaks & assist customers in making better decisions regarding water usage. The project estimates 250 AFY of conservation in the domestic water supply. The project will also assist with water shortage contingency planning by allowing the City to track hourly water use to assure that customers are abiding by restrictions on water use or schedules.
3. City of Guadalupe's Recycled Water Feasibility Study – The study will include a market assessment & identification of required recycled water distribution facilities as well as a cost/benefit analysis to evaluate the feasibility of supplying recycled water to the City of Guadalupe & surrounding property owners, all of whom are dependent on groundwater. The market assessment will identify potential recycled water customers, both within & adjacent to the City's boundaries & match recycled supply to potential demand. Potential customers include existing sports parks, community parks, schools, cemeteries, produce packing plants & agricultural areas. Delivery of recycled water to agricultural customers outside the service area will be evaluated differently due to the impact on overall revenues. Once reuse categories are prioritized & sets of potential customers are identified, distribution system alternatives will be explored to maximize recycled water use with the lowest capital O&M costs. The economic of recycled water distribution systems are such that larger demand will dictate the alignments of backbone pipeline routes. After alternative alignments are identified for up to three different customer sets, the required pipelines pump stations & storage reservoirs can be sited. The study will also discuss the feasibility, limitations & potential water quality impacts or groundwater recharge & compare the potential benefits with the delivery of recycled water to existing potable water customers.
4. Lompoc Valley Regional Leak Detection Program – The project is collaboration between the City of Lompoc, the Mission Hills CSD & the Vandenberg Village

CSD to complete a leak detection audit of the water distribution systems of the 3 utilities & develop & implement a 5-year plan for the repair and/or replacement of leaky water services & mains. Leak detection reports will be reviewed to determine which sections of distribution systems show the highest percentage of system leaks. A plan will be prepared for leak repair, targeting the areas with the highest percentage of leaks for sequencing of repairs.

5. Central Coast Water Authority's Pipeline Erosion Damage Repair Project – The CCWA owns & operates a pipeline that delivers water from the Santa Ynez Pumping Plant located in the Santa Ynez Valley to Lake Cachuma. There are 2 locations along the pipeline where there is exposure due to erosion of overlying soils caused by high flow releases from Bradbury Dam or high flow storm events & associated flow of water over the pipeline's alignment. These types of pipeline exposures place the pipeline at risk for failure because the exposed pipe has lost the structural confinement of backfill, an important strengthening component of the pipeline & because the exposed pipeline will bridge & obstruct water flow, which will subject the pipeline to strong external forces arising from the impact of high flow water. The project will implement both interim & long term fixes to protect the sections of the exposed pipe from further damage. The pipeline was originally constructed in the 1960's for the purposes of delivering water from Lake Cachuma to the Santa Ynez Valley. CCWA acquired the pipeline in the mid-1990's to complete its water conveyance system for its southern Santa Barbara County participants. The pipeline is comprised of a nominal 30" diameter pipe, 12 miles long & is either cement mortar line/coal tar enamel coated steel pipe or modified pre-stressed concrete cylinder pipe. The Santa Ynez Pumping Plant will discharge water into the pipeline at flow rates as high as 10,000 gpm, with a shutoff head of 376'.
6. Goleta Sanitary District's Wastewater Treatment Plant Upgrade – Upgrading the existing wastewater treatment facilities in order to be able to treat 100% of the wastewater from Goleta Valley to a full secondary treatment level. The current facilities have a design flow of 9 MGD & can treat 100% of flow to the primary level, but only 4.38 MGD can be treated to the secondary standards. The project will need to increase the capacity of the secondary treatment structures without increasing the overall capacity of the treatment plant. Construction will include a new biofilter, an aeration basin, two new secondary sedimentation tanks & the conversion of an existing stabilization basin into a flow equalization basin.

7. City of Goleta's San Jose Creek Capacity Improvement & Fish Passage Project – Removal & reconstruction of the San Jose Creek Flood Control Channel & reconstruction of the Hollister Ave. bridge over San Jose Creek. When completed, the multi-objective project will increase flood conveyance capacity, reduce flood hazard & provide fish passage for migrating endangered steelhead trout. The project will remove over 200 residential, commercial & industrial properties from the regulatory floodplain. The new channel will include an articulated concrete bottom allowing fish passage during low flow events, reduce adverse water quality impacts to Goleta Slough & increase groundwater recharge.

The following exhibits are included in this document:

- MOU 2005
- MOU 2009
- MOU 2010
- Regional Objectives
- Project Selection Process Documents

In summary, as the Cooperating Partners were a party to the biennial review, sanctioned its implementation and fully and actively involved in the process, signatures of each of the MOU signatories/authorized representatives are below. These signatures were executed in parts:

Signature of the Agency Representative:

By: 

Name: CHRIS DAHLSTROM

Title: GENERAL MANAGER

Organization: SANTA YNEZ RIVER WATER CONSERVATION DIST. ID No. 1

Date: DECEMBER 1, 2010

Signature of the Agency Representative:

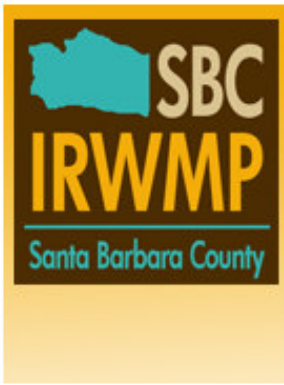
By: Joe Barget

Name: Joe Barget

Title: General Manager

Organization: Vandenberg Village CSD

Date: November 22, 2010



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

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Signature of the Agency Representative:

By: Carpinteria Valley Water District

Name: Robert McDonald

Title: District Engineer

Organization: Carpinteria Valley Water Dist

Date: 11/23/10

Signature of the Agency Representative:

By: 

Name: Craig M. Murray, P.E.

Title: General Manager

Organization: Carpinteria Sanitary District

Date: November 17, 2010

Signature of the Agency Representative:

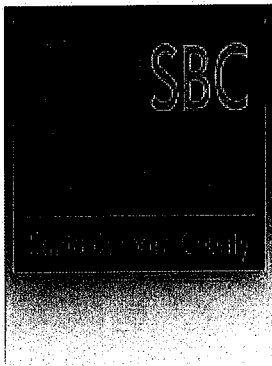
By: 

Name: TERRI STRICKLIN

Title: SECRETARY

Organization: CASMAHA CSD

Date: 12-1-10



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

### **Background**

In November of 2004, the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) released the *Integrated Regional Water Management Grant Program Guidelines* which set forth the requirement of an adopted Integrated Regional Water Management (IRWM) Plan as a pre-requisite to applying for and obtaining IRWM grant monies. In response to the need for development of such a plan, the Santa Barbara County Water Agency, along with 29 other jurisdictions, districts, JPAs, private water companies and others organized to form the "Cooperating Partners" group. The first Memorandum of Understanding (MOU) was developed and executed in 2005 with the expressed intent of IRWM plan development and application for Proposition 50 monies. The MOU provided for judicious Cooperating Partners cost sharing to write the IRWM Plan and established a governance structure for overall IRWM in Santa Barbara County.

The governance structure has evolved over time, partly in response to new legislation and DWR Guidelines, to wit, Prop 84, and partly because the Cooperating Partners identified areas for improvement. As such, two subsequent MOUs (2009, 2010) have been developed and executed. Both of the subsequent MOUs have built upon the original MOU; typical language includes the purpose of the agreement and provisions for financing, indemnification, settlement of disputes, and length and termination of the agreement. They require only the signatures of the authorized representatives of the organizations. The MOUs serve to further and strengthen the IRWM process and goals for collaborative and integrated regional water management development. The March 2010 MOU added language enabling expanded membership, establishing a more inclusive governance structure and defining roles and decision-making processes. Generally, the MOU provides a basis and commitment to coherent and enduring IRWM efforts throughout the region.

### **Santa Barbara County 2007 IRWM Plan**

The County's first IRWM Plan was adopted in 2007 and enabled the County to apply for funds under Proposition 50. The County successfully obtained \$25 million in grant monies for 14 projects throughout the region. The State Grant Agreement was signed

in December, 2008 and at the date of print, three of the 14 original project funded under Prop 50 have been successfully completed.

The 2007 IRWM Plan conformed to the Guidelines in effect at the time and will need to be updated in compliance with the new IRWM Plan Guidelines released by DWR in August, 2010. Pursuant to an update, Santa Barbara County applied for planning grant funds under Prop 84 and anticipates updating the IRWM Plan to current plan standards by 2012.

Prior to an update to the IRWM Plan, however, Santa Barbara County is seeking implementation grant monies to fund actual projects through Proposition 84. The Proposition 84 Guidelines for Implementation grant funds stipulate that in order for projects to be eligible for consideration and potential funding, projects must be either included within the existing IRWM Plan or have been added to the project list for the IRWM Plan according to the procedures outlined in the Plan. In the case of Santa Barbara County, the 7 projects included in the Implementation Grant Application were added through the Biennial Review process outlined in the 2007 IRWM Plan.

#### **Biennial Review – IRWM Plan Adaptive Management**

As part of an overall adaptive management strategy for the evaluation of projects and plan performance, the 2007 IRWM Plan states that the Cooperating Partners will conduct a biennial review of the IRWM Plan and evaluate Santa Barbara IRWM Plan's objectives, priorities, water management strategies, and project lists. The IRWM Plan also commits the Cooperating Partners to modifying the aforementioned Plan elements as appropriate. Specifically, the 2007 IRWM Plan describes the implementation of the adaptive management framework as follows:

*The IRWMP's overall adaptive management framework will be implemented in the following manner in accordance with the established governance practices described in Section 1:*

*1. IRWMP managers will conduct a biennial review and produce a 5-year report summarizing progress made in achieving IRWMP goals, including the tracking of funded projects, modifications to projects, and development of new projects as a result of the plan. The results of the biennial review and the 5-year report will be posted on the IRWMP Web site (<http://www.countyofsb.org/pwd/water/irwmp.htm>). The performance of implemented projects will be compared to original project objectives to ensure objectives were met.*

*2. IRWMP objectives, priorities, and water management strategies will be evaluated during the biennial review and modified appropriately. The need to develop different projects to better meet the plan objectives and regional issues will be considered, as will the need to modify existing projects. Projects that may be deleted (for example, because their purpose has been met through another project or because conditions have changed) also will be considered at this time.*

*3. Minor adjustments to planning assumptions, operations, or actions will be adopted as necessary. If significant changes to the approved IRWMP are found to be required in the biennial review or the 5-year IRWMP report, the plan will be revised and submitted for approval by Cooperating Partners as necessary.*

### **Biennial Review – Implementation**

In conformance with the above, the Cooperating Partners undertook the biennial review process between 2009 and 2010 through an extensive and exhaustive public process commencing in September 2009. Over the course of 8 months, the Cooperating Partners and the Steering Committee met no less than once per month to:

- Identify, define and scope the Region's issues, conflicts and objectives in the categories of water demand, operational efficiency and transfers, water supply, flood management, water quality and resource stewardship.
- Solicit and develop projects that align with the Region's goals and objectives as identified and updated.
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- Outline the objective and scientific processes employed in the selection of projects for inclusion into the Implementation Grant application.
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- Review the draft and final list of selected projects.

As a result of the biennial review, the Region identified the following objectives:

- Increase water use efficiency including water reuse and water conservation measures to increase and extend existing water supplies.
- Improve operational efficiency, transfers, and supply reliability
- Increase water supply in the least costly, most efficient, and most reliable manner
- Improve management of groundwater basins through conjunctive use
- Improve flood management to protect people, property, and ecosystems
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- Improve quality of groundwater, stormwater runoff, agricultural water runoff, and treated water discharges to regional water bodies
- Improve water management to protect and restore ecosystems and wildlife habitat

Further, the biennial review process included 78 new projects in the IRWM Plan, seven of which were selected for inclusion in the implementation grant application projects based on their ranking with the established selection criteria and alignment with the Region 's objectives and DWR's Prop 84 program preferences.

The selected projects for the Implementation Grant application include:

- I. City of Santa Maria's Untreated Water Landscape Irrigation Project – Extends an existing groundwater landscape irrigation system from the City's Civic Center area to facilities with landscaped area, including Allen Hancock College, Miller Elementary school, Santa Maria High school, Santa Maria Fairpark & Adam Basin. The project allows for water use efficiency while enhancing water management efforts through delivery systems that utilize an abundant groundwater resource from the Santa Maria groundwater basin. The irrigation system consists of several old production water wells that were removed from domestic supply due to high nitrate concentrations. The wells will be rehabilitated & put into service to water turf & other landscapes through a piping system that is isolated

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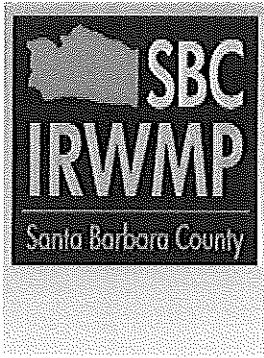
By: Andrew Dudley for John Brady

Name: Andrew Dudley

Title: Engineering Technician

Organization: CENTRAL COAST WATER AUTHORITY

Date: 12-1-10



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November 2010

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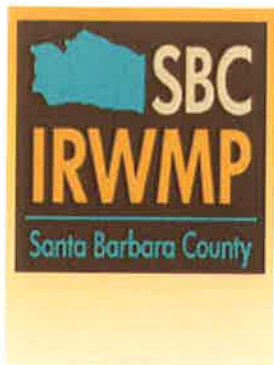
By: Rose Hess

Name: Rose Hess

Title: City Engineer

Organization: City of Buellton

Date: Dec 6, 2011



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

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*The IRWMP's overall adaptive management framework will be implemented in the following manner in accordance with the established governance practices described in Section 1:*

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- Identify, define and scope the Region's issues, conflicts and objectives in the categories of water demand, operational efficiency and transfers, water supply, flood management, water quality and resource stewardship.
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Further, the biennial review process included 78 new projects in the IRWM Plan, seven of which were selected for inclusion in the implementation grant application projects based on their ranking with the established selection criteria and alignment with the Region 's objectives and DWR's Prop 84 program preferences.

The selected projects for the Implementation Grant application include:

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from the domestic supply piping. The efficient match of water resources to water use augments drought preparedness efforts within the region. Further, water reliability is strengthened by decreasing the burden on State Water Project water.

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In summary, as the Cooperating Partners were a party to the biennial review, sanctioned its implementation and fully and actively involved in the process, signatures of each of the MOU signatories/authorized representatives are below. These signatures were executed in parts:

Signature of the Agency Representative:

By: 

Name: Dave Dunflinger

Title: City Manager

Organization: City of Carpinteria

Date: November 17, 2010

Signature of the Agency Representative:

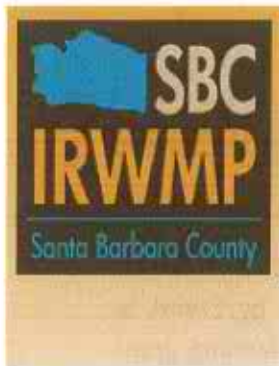
By: 

Name: Daniel Singer

Title: City Manager

Organization: City of Goleta

Date: 12/6/10



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

### **Background**

In November of 2004, the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) released the *Integrated Regional Water Management Grant Program Guidelines* which set forth the requirement of an adopted Integrated Regional Water Management (IRWM) Plan as a pre-requisite to applying for and obtaining IRWM grant monies. In response to the need for development of such a plan, the Santa Barbara County Water Agency, along with 29 other jurisdictions, districts, JPAs, private water companies and others organized to form the "Cooperating Partners" group. The first Memorandum of Understanding (MOU) was developed and executed in 2005 with the expressed intent of IRWM plan development and application for Proposition 50 monies. The MOU provided for judicious Cooperating Partners cost sharing to write the IRWM Plan and established a governance structure for overall IRWM in Santa Barbara County.

The governance structure has evolved over time, partly in response to new legislation and DWR Guidelines, to wit, Prop 84, and partly because the Cooperating Partners identified areas for improvement. As such, two subsequent MOUs (2009, 2010) have been developed and executed. Both of the subsequent MOUs have built upon the original MOU; typical language includes the purpose of the agreement and provisions for financing, indemnification, settlement of disputes, and length and termination of the agreement. They require only the signatures of the authorized representatives of the organizations. The MOUs serve to further and strengthen the IRWM process and goals for collaborative and integrated regional water management development. The March 2010 MOU added language enabling expanded membership, establishing a more inclusive governance structure and defining roles and decision-making processes. Generally, the MOU provides a basis and commitment to coherent and enduring IRWM efforts throughout the region.

### **Santa Barbara County 2007 IRWM Plan**

The County's first IRWM Plan was adopted in 2007 and enabled the County to apply for funds under Proposition 50. The County successfully obtained \$25 million in grant monies for 14 projects throughout the region. The State Grant Agreement was signed

in December, 2008 and at the date of print, three of the 14 original project funded under Prop 50 have been successfully completed.

The 2007 IRWM Plan conformed to the Guidelines in effect at the time and will need to be updated in compliance with the new IRWM Plan Guidelines released by DWR in August, 2010. Pursuant to an update, Santa Barbara County applied for planning grant funds under Prop 84 and anticipates updating the IRWM Plan to current plan standards by 2012.

Prior to an update to the IRWM Plan, however, Santa Barbara County is seeking implementation grant monies to fund actual projects through Proposition 84. The Proposition 84 Guidelines for Implementation grant funds stipulate that in order for projects to be eligible for consideration and potential funding, projects must be either included within the existing IRWM Plan or have been added to the project list for the IRWM Plan according to the procedures outlined in the Plan. In the case of Santa Barbara County, the 7 projects included in the Implementation Grant Application were added through the Biennial Review process outlined in the 2007 IRWM Plan.

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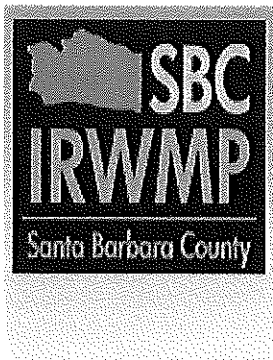
By: Pat Kelly

Name: ROBERT PATRICK KELLY

Title: ASSISTANT PUBLIC WORKS DIRECTOR / CITY ENGINEER

Organization: CITY OF SANTA BARBARA

Date: 12/6/10



## Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review

November 2010

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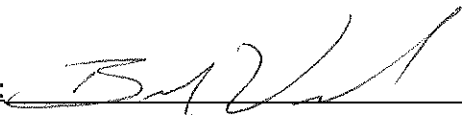
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The following exhibits are included in this document:

- MOU 2005
- MOU 2009
- MOU 2010
- Regional Objectives
- Project Selection Process Documents

In summary, as the Cooperating Partners were a party to the biennial review, sanctioned its implementation and fully and actively involved in the process, signatures of each of the MOU signatories/authorized representatives are below. These signatures were executed in parts:

Signature of the Agency Representative:

By: 

Name: BRAD VIDRO

Title: CITY MANAGER

Organization: CITY OF SOLVANG

Date: 11/22/10



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

### **Background**

In November of 2004, the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) released the *Integrated Regional Water Management Grant Program Guidelines* which set forth the requirement of an adopted Integrated Regional Water Management (IRWM) Plan as a pre-requisite to applying for and obtaining IRWM grant monies. In response to the need for development of such a plan, the Santa Barbara County Water Agency, along with 29 other jurisdictions, districts, JPAs, private water companies and others organized to form the "Cooperating Partners" group. The first Memorandum of Understanding (MOU) was developed and executed in 2005 with the expressed intent of IRWM plan development and application for Proposition 50 monies. The MOU provided for judicious Cooperating Partners cost sharing to write the IRWM Plan and established a governance structure for overall IRWM in Santa Barbara County.

The governance structure has evolved over time, partly in response to new legislation and DWR Guidelines, to wit, Prop 84, and partly because the Cooperating Partners identified areas for improvement. As such, two subsequent MOUs (2009, 2010) have been developed and executed. Both of the subsequent MOUs have built upon the original MOU; typical language includes the purpose of the agreement and provisions for financing, indemnification, settlement of disputes, and length and termination of the agreement. They require only the signatures of the authorized representatives of the organizations. The MOUs serve to further and strengthen the IRWM process and goals for collaborative and integrated regional water management development. The March 2010 MOU added language enabling expanded membership, establishing a more inclusive governance structure and defining roles and decision-making processes. Generally, the MOU provides a basis and commitment to coherent and enduring IRWM efforts throughout the region.

### **Santa Barbara County 2007 IRWM Plan**

The County's first IRWM Plan was adopted in 2007 and enabled the County to apply for funds under Proposition 50. The County successfully obtained \$25 million in grant monies for 14 projects throughout the region. The State Grant Agreement was signed

in December, 2008 and at the date of print, three of the 14 original project funded under Prop 50 have been successfully completed.

The 2007 IRWM Plan conformed to the Guidelines in effect at the time and will need to be updated in compliance with the new IRWM Plan Guidelines released by DWR in August, 2010. Pursuant to an update, Santa Barbara County applied for planning grant funds under Prop 84 and anticipates updating the IRWM Plan to current plan standards by 2012.

Prior to an update to the IRWM Plan, however, Santa Barbara County is seeking implementation grant monies to fund actual projects through Proposition 84. The Proposition 84 Guidelines for Implementation grant funds stipulate that in order for projects to be eligible for consideration and potential funding, projects must be either included within the existing IRWM Plan or have been added to the project list for the IRWM Plan according to the procedures outlined in the Plan. In the case of Santa Barbara County, the 7 projects included in the Implementation Grant Application were added through the Biennial Review process outlined in the 2007 IRWM Plan.

### **Biennial Review – IRWM Plan Adaptive Management**

As part of an overall adaptive management strategy for the evaluation of projects and plan performance, the 2007 IRWM Plan states that the Cooperating Partners will conduct a biennial review of the IRWM Plan and evaluate Santa Barbara IRWM Plan's objectives, priorities, water management strategies, and project lists. The IRWM Plan also commits the Cooperating Partners to modifying the aforementioned Plan elements as appropriate. Specifically, the 2007 IRWM Plan describes the implementation of the adaptive management framework as follows:

*The IRWMP's overall adaptive management framework will be implemented in the following manner in accordance with the established governance practices described in Section 1:*

*1. IRWMP managers will conduct a biennial review and produce a 5-year report summarizing progress made in achieving IRWMP goals, including the tracking of funded projects, modifications to projects, and development of new projects as a result of the plan. The results of the biennial review and the 5-year report will be posted on the IRWMP Web site (<http://www.countyofsb.org/pwd/water/irwmp.htm>). The performance of implemented projects will be compared to original project objectives to ensure objectives were met.*

*2. IRWMP objectives, priorities, and water management strategies will be evaluated during the biennial review and modified appropriately. The need to develop different projects to better meet the plan objectives and regional issues will be considered, as will the need to modify existing projects. Projects that may be deleted (for example, because their purpose has been met through another project or because conditions have changed) also will be considered at this time.*

*3. Minor adjustments to planning assumptions, operations, or actions will be adopted as necessary. If significant changes to the approved IRWMP are found to be required in the biennial review or the 5-year IRWMP report, the plan will be revised and submitted for approval by Cooperating Partners as necessary.*

### **Biennial Review – Implementation**

In conformance with the above, the Cooperating Partners undertook the biennial review process between 2009 and 2010 through an extensive and exhaustive public process commencing in September 2009. Over the course of 8 months, the Cooperating Partners and the Steering Committee met no less than once per month to:

- Identify, define and scope the Region's issues, conflicts and objectives in the categories of water demand, operational efficiency and transfers, water supply, flood management, water quality and resource stewardship.
- Solicit and develop projects that align with the Region's goals and objectives as identified and updated.
- Solicit and develop projects that align with DWR's Program Preferences.
- Outline the objective and scientific processes employed in the selection of projects for inclusion into the Implementation Grant application.
- Determine criteria and sub-criteria for project selection process.
- Score, rank and select projects for inclusion in the Implementation grant application.
- Review the draft and final list of selected projects.

As a result of the biennial review, the Region identified the following objectives:

- Increase water use efficiency including water reuse and water conservation measures to increase and extend existing water supplies.
- Improve operational efficiency, transfers, and supply reliability
- Increase water supply in the least costly, most efficient, and most reliable manner
- Improve management of groundwater basins through conjunctive use
- Improve flood management to protect people, property, and ecosystems
- Improve water quality
- Improve quality of groundwater, stormwater runoff, agricultural water runoff, and treated water discharges to regional water bodies
- Improve water management to protect and restore ecosystems and wildlife habitat

Further, the biennial review process included 78 new projects in the IRWM Plan, seven of which were selected for inclusion in the implementation grant application projects based on their ranking with the established selection criteria and alignment with the Region 's objectives and DWR's Prop 84 program preferences.

The selected projects for the Implementation Grant application include:

1. City of Santa Maria's Untreated Water Landscape Irrigation Project – Extends an existing groundwater landscape irrigation system from the City's Civic Center area to facilities with landscaped area, including Allen Hancock College, Miller Elementary school, Santa Maria High school, Santa Maria Fairpark & Adam Basin. The project allows for water use efficiency while enhancing water management efforts through delivery systems that utilize an abundant groundwater resource from the Santa Maria groundwater basin. The irrigation system consists of several old production water wells that were removed from domestic supply due to high nitrate concentrations. The wells will be rehabilitated & put into service to water turf & other landscapes through a piping system that is isolated

from the domestic supply piping. The efficient match of water resources to water use augments drought preparedness efforts within the region. Further, water reliability is strengthened by decreasing the burden on State Water Project water.

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3. City of Guadalupe's Recycled Water Feasibility Study – The study will include a market assessment & identification of required recycled water distribution facilities as well as a cost/benefit analysis to evaluate the feasibility of supplying recycled water to the City of Guadalupe & surrounding property owners, all of whom are dependent on groundwater. The market assessment will identify potential recycled water customers, both within & adjacent to the City's boundaries & match recycled supply to potential demand. Potential customers include existing sports parks, community parks, schools, cemeteries, produce packing plants & agricultural areas. Delivery of recycled water to agricultural customers outside the service area will be evaluated differently due to the impact on overall revenues. Once reuse categories are prioritized & sets of potential customers are identified, distribution system alternatives will be explored to maximize recycled water use with the lowest capital O&M costs. The economic of recycled water distribution systems are such that larger demand will dictate the alignments of backbone pipeline routes. After alternative alignments are identified for up to three different customer sets, the required pipelines pump stations & storage reservoirs can be sited. The study will also discuss the feasibility, limitations & potential water quality impacts or groundwater recharge & compare the potential benefits with the delivery of recycled water to existing potable water customers.
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Signature of the Agency Representative:

By: Jonathan S. Frye

Name: Jonathan S. Frye

Title: Interim Deputy Public Works Director

Organization: Santa Barbara County Flood Control & Water Conservation District

Date: November 24, 2010

Signature of the Agency Representative:

By: U.S. Wilson

Name: U.S. Wilson

Title: Manager

Organization: Cuyama Community Services District

Date: November 19, 2010

Signature of the Agency Representative:

By: Chris Rich

Name: Chris Rich

Title: Water Supply & Conservation Manager

Organization: Goleta Water District

Date: Dec 6, 2010

Signature of the Agency Representative:

By: Martin Wilder

Name: MARTIN WILDER

Title: ENGINEERING MANAGER

Organization: LAGUNA COUNTY SANITATION DISTRICT

Date: NOVEMBER 16, 2010

Signature of the Agency Representative:

By: Kathleen Rees

Name: KATHLEEN REES

Title: GENERAL MANAGER

Organization: CACHUMA OPERATIONS MAINTENANCE BOARD

Date: 11/18/10

Signature of the Agency Representative:

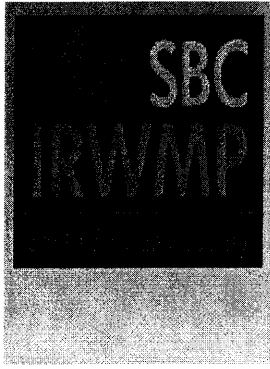
By: Bruce A. Wales

Name: BRUCE A. WALES

Title: GENERAL MANAGER

Organization: SANTA YNEZ RIVER WATER  
CONSERVATION DISTRICT

Date: November 22, 2010



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

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Signature of the Agency Representative:

By: 

Name: REGAN M. CANDELARIO

Title: CITY ADMINISTRATOR

Organization: CITY OF GUADALUPE

Date: 11-29-10

Signature of the Agency Representative:

By:  \_\_\_\_\_

Name: Richard Sweet

Title: Utilities Director

Organization: City of Santa Maria

Date: 11/16/10

Signature of the Agency Representative:

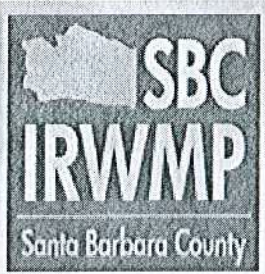
By: Christy Griesemer

Name: Christy Griesemer

Title: Secretary

Organization: (SMVWCD) - Santa Maria Valley Water Conservation District

Date: 12-6-10



## **Santa Barbara County IRWM Region Integrated Regional Water Management Plan - 2007 Biennial Review**

**November 2010**

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The 2007 IRWM Plan conformed to the Guidelines in effect at the time and will need to be updated in compliance with the new IRWM Plan Guidelines released by DWR in August, 2010. Pursuant to an update, Santa Barbara County applied for planning grant funds under Prop 84 and anticipates updating the IRWM Plan to current plan standards by 2012.

Prior to an update to the IRWM Plan, however, Santa Barbara County is seeking implementation grant monies to fund actual projects through Proposition 84. The Proposition 84 Guidelines for Implementation grant funds stipulate that in order for projects to be eligible for consideration and potential funding, projects must be either included within the existing IRWM Plan or have been added to the project list for the IRWM Plan according to the procedures outlined in the Plan. In the case of Santa Barbara County, the 7 projects included in the Implementation Grant Application were added through the Biennial Review process outlined in the 2007 IRWM Plan.

#### **Biennial Review – IRWM Plan Adaptive Management**

As part of an overall adaptive management strategy for the evaluation of projects and plan performance, the 2007 IRWM Plan states that the Cooperating Partners will conduct a biennial review of the IRWM Plan and evaluate Santa Barbara IRWM Plan's objectives, priorities, water management strategies, and project lists. The IRWM Plan also commits the Cooperating Partners to modifying the aforementioned Plan elements as appropriate. Specifically, the 2007 IRWM Plan describes the implementation of the adaptive management framework as follows:

*The IRWMP's overall adaptive management framework will be implemented in the following manner in accordance with the established governance practices described in Section 1:*

*1. IRWMP managers will conduct a biennial review and produce a 5-year report summarizing progress made in achieving IRWMP goals, including the tracking of funded projects, modifications to projects, and development of new projects as a result of the plan. The results of the biennial review and the 5-year report will be posted on the IRWMP Web site (<http://www.countyofsb.org/pwd/water/irwmp.htm>). The performance of implemented projects will be compared to original project objectives to ensure objectives were met.*

*2. IRWMP objectives, priorities, and water management strategies will be evaluated during the biennial review and modified appropriately. The need to develop different projects to better meet the plan objectives and regional issues will be considered, as will the need to modify existing projects. Projects that may be deleted (for example, because their purpose has been met through another project or because conditions have changed) also will be considered at this time.*

*3. Minor adjustments to planning assumptions, operations, or actions will be adopted as necessary. If significant changes to the approved IRWMP are found to be required in the biennial review or the 5-year IRWMP report, the plan will be revised and submitted for approval by Cooperating Partners as necessary.*

### **Biennial Review – Implementation**

In conformance with the above, the Cooperating Partners undertook the biennial review process between 2009 and 2010 through an extensive and exhaustive public process commencing in September 2009. Over the course of 8 months, the Cooperating Partners and the Steering Committee met no less than once per month to:

- Identify, define and scope the Region's issues, conflicts and objectives in the categories of water demand, operational efficiency and transfers, water supply, flood management, water quality and resource stewardship.
- Solicit and develop projects that align with the Region's goals and objectives as identified and updated.
- Solicit and develop projects that align with DWR's Program Preferences.
- Outline the objective and scientific processes employed in the selection of projects for inclusion into the Implementation Grant application.
- Determine criteria and sub-criteria for project selection process.
- Score, rank and select projects for inclusion in the Implementation grant application.
- Review the draft and final list of selected projects.

As a result of the biennial review, the Region identified the following objectives:

- Increase water use efficiency including water reuse and water conservation measures to increase and extend existing water supplies.
- Improve operational efficiency, transfers, and supply reliability
- Increase water supply in the least costly, most efficient, and most reliable manner
- Improve management of groundwater basins through conjunctive use
- Improve flood management to protect people, property, and ecosystems
- Improve water quality
- Improve quality of groundwater, stormwater runoff, agricultural water runoff, and treated water discharges to regional water bodies
- Improve water management to protect and restore ecosystems and wildlife habitat

Further, the biennial review process included 78 new projects in the IRWM Plan, seven of which were selected for inclusion in the implementation grant application projects based on their ranking with the established selection criteria and alignment with the Region 's objectives and DWR's Prop 84 program preferences.

The selected projects for the Implementation Grant application include:

- I. City of Santa Maria's Untreated Water Landscape Irrigation Project – Extends an existing groundwater landscape irrigation system from the City's Civic Center area to facilities with landscaped area, including Allen Hancock College, Miller Elementary school, Santa Maria High school, Santa Maria Fairpark & Adam Basin. The project allows for water use efficiency while enhancing water management efforts through delivery systems that utilize an abundant groundwater resource from the Santa Maria groundwater basin. The irrigation system consists of several old production water wells that were removed from domestic supply due to high nitrate concentrations. The wells will be rehabilitated & put into service to water turf & other landscapes through a piping system that is isolated

from the domestic supply piping. The efficient match of water resources to water use augments drought preparedness efforts within the region. Further, water reliability is strengthened by decreasing the burden on State Water Project water.

2. City of Santa Maria's LeakWatch – Allows the City to complete the installation of a water meter system which reads water use data in real time. With the LeakWatch system, real-time data is broken down to show usage by hour, which could indicate a water leak or over use if there is 24-hour activity. The system includes base stations, converted water meter registers, transmitters & associated software. Data provided by the fixed-base system is used to detect leaks & assist customers in making better decisions regarding water usage. The project estimates 250 AFY of conservation in the domestic water supply. The project will also assist with water shortage contingency planning by allowing the City to track hourly water use to assure that customers are abiding by restrictions on water use or schedules.
3. City of Guadalupe's Recycled Water Feasibility Study – The study will include a market assessment & identification of required recycled water distribution facilities as well as a cost/benefit analysis to evaluate the feasibility of supplying recycled water to the City of Guadalupe & surrounding property owners, all of whom are dependent on groundwater. The market assessment will identify potential recycled water customers, both within & adjacent to the City's boundaries & match recycled supply to potential demand. Potential customers include existing sports parks, community parks, schools, cemeteries, produce packing plants & agricultural areas. Delivery of recycled water to agricultural customers outside the service area will be evaluated differently due to the impact on overall revenues. Once reuse categories are prioritized & sets of potential customers are identified, distribution system alternatives will be explored to maximize recycled water use with the lowest capital O&M costs. The economic of recycled water distribution systems are such that larger demand will dictate the alignments of backbone pipeline routes. After alternative alignments are identified for up to three different customer sets, the required pipelines pump stations & storage reservoirs can be sited. The study will also discuss the feasibility, limitations & potential water quality impacts or groundwater recharge & compare the potential benefits with the delivery of recycled water to existing potable water customers.
4. Lompoc Valley Regional Leak Detection Program – The project is collaboration between the City of Lompoc, the Mission Hills CSD & the Vandenberg Village

CSD to complete a leak detection audit of the water distribution systems of the 3 utilities & develop & implement a 5-year plan for the repair and/or replacement of leaky water services & mains. Leak detection reports will be reviewed to determine which sections of distribution systems show the highest percentage of system leaks. A plan will be prepared for leak repair, targeting the areas with the highest percentage of leaks for sequencing of repairs.

5. Central Coast Water Authority's Pipeline Erosion Damage Repair Project – The CCWA owns & operates a pipeline that delivers water from the Santa Ynez Pumping Plant located in the Santa Ynez Valley to Lake Cachuma. There are 2 locations along the pipeline where there is exposure due to erosion of overlying soils caused by high flow releases from Bradbury Dam or high flow storm events & associated flow of water over the pipeline's alignment. These types of pipeline exposures place the pipeline at risk for failure because the exposed pipe has lost the structural confinement of backfill, an important strengthening component of the pipeline & because the exposed pipeline will bridge & obstruct water flow, which will subject the pipeline to strong external forces arising from the impact of high flow water. The project will implement both interim & long term fixes to protect the sections of the exposed pipe from further damage. The pipeline was originally constructed in the 1960's for the purposes of delivering water from Lake Cachuma to the Santa Ynez Valley. CCWA acquired the pipeline in the mid-1990's to complete its water conveyance system for its southern Santa Barbara County participants. The pipeline is comprised of a nominal 30" diameter pipe, 12 miles long & is either cement mortar line/coal tar enamel coated steel pipe or modified pre-stressed concrete cylinder pipe. The Santa Ynez Pumping Plant will discharge water into the pipeline at flow rates as high as 10,000 gpm, with a shutoff head of 376'.
6. Goleta Sanitary District's Wastewater Treatment Plant Upgrade – Upgrading the existing wastewater treatment facilities in order to be able to treat 100% of the wastewater from Goleta Valley to a full secondary treatment level. The current facilities have a design flow of 9 MGD & can treat 100% of flow to the primary level, but only 4.38 MGD can be treated to the secondary standards. The project will need to increase the capacity of the secondary treatment structures without increasing the overall capacity of the treatment plant. Construction will include a new biofilter, an aeration basin, two new secondary sedimentation tanks & the conversion of an existing stabilization basin into a flow equalization basin.

7. City of Goleta's San Jose Creek Capacity Improvement & Fish Passage Project – Removal & reconstruction of the San Jose Creek Flood Control Channel & reconstruction of the Hollister Ave. bridge over San Jose Creek. When completed, the multi-objective project will increase flood conveyance capacity, reduce flood hazard & provide fish passage for migrating endangered steelhead trout. The project will remove over 200 residential, commercial & industrial properties from the regulatory floodplain. The new channel will include an articulated concrete bottom allowing fish passage during low flow events, reduce adverse water quality impacts to Goleta Slough & increase groundwater recharge.

The following exhibits are included in this document:

- MOU 2005
- MOU 2009
- MOU 2010
- Regional Objectives
- Project Selection Process Documents

In summary, as the Cooperating Partners were a party to the biennial review, sanctioned its implementation and fully and actively involved in the process, signatures of each of the MOU signatories/authorized representatives are below. These signatures were executed in parts:

Signature of the Agency Representative:

By: 

Name: RICHARD G. SWEET, P.E.

Title: Chair

Organization: Twitchell Management Authority

Date: December 9, 2010